

APPENDIX 2

NARRATIVE

2. Project Description

Beth Israel Lahey Health, Inc. (the “Applicant” or “BILH”), with a principal place of business at 20 University Road, Suite 700, Cambridge, MA 02138, is filing a Notice of Determination of Need (“DoN”) (“Application”) with the Department of Public Health (“DPH”) for the reactivation of one (1) existing dormant linear accelerator (“LINAC”) at Beth Israel Deaconess Hospital - Plymouth, Inc. (“BID-P” or “BID Plymouth” or “Hospital”), located at 275 Sandwich St, Plymouth, MA 02360 (the “Proposed Project”). The Proposed Project also includes necessary renovations to the LINAC vault and control rooms to meet current DPH architectural standards.

The Applicant is an integrated health care delivery system of teaching and community hospitals, physician groups, behavioral health providers, post-acute care providers and other caregivers serving patients in Greater Boston¹ and the surrounding communities in Eastern Massachusetts and Southeastern New Hampshire. Its member hospitals include Addison Gilbert Hospital; Anna Jaques Hospital; Beth Israel Deaconess Medical Center; Beth Israel Deaconess Hospital-Milton; Beth Israel Deaconess Hospital-Needham, BID Plymouth; Beverly Hospital; Lahey Hospital & Medical Center; Lahey Medical Center, Peabody; Mount Auburn Hospital; New England Baptist Hospital; and Winchester Hospital (collectively known as “BILH Hospitals”).

BID Plymouth is a 170-bed acute care hospital serving the communities of Plymouth, Carver, Kingston, Middleboro, Duxbury, Marshfield, Bourne, Pembroke, Sandwich, Halifax, and Plympton. The Hospital provides a full range of comprehensive community hospital services including primary and preventative care, emergency services, inpatient acute care, inpatient psychiatric services, and specialty services. The Hospital joined Beth Israel Deaconess in 2014.

To meet the needs of its patient panel, the Applicant requests DoN approval to reactivate one (1) LINAC that is dormant. Currently, the Hospital is limited to use of a single LINAC, which decreases the Hospital's ability to accommodate flexible scheduling for different procedure types, puts strain on the single machine currently in use, and risks the complete unavailability of services if the single LINAC is taken offline. Additionally, the Hospital requires the reactivation of the LINAC unit in order to accommodate projected future demand for radiation therapy.

Finally, the Proposed Project will meaningfully contribute to Massachusetts' goals for cost containment by providing high-quality, reliable, and convenient cancer care within the community. Moreover, the Proposed Project seeks to use existing equipment in an existing space, rather than purchasing entirely new equipment or constructing any new space, thereby reducing the capital expenditure for the Proposed Project.

In sum, the Proposed Project is necessary to ensure access to high-quality cancer care, without increasing health care costs. By improving the reliability and flexibility of its services, the Applicant will improve care delivery as well as health outcomes and quality of life. Accordingly, the Proposed Project meets the factors of review for Determination of Need approval.

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

Patient Panel:

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

¹ Greater Boston includes the following cities/towns: Acton, Arlington, Ashland, Bedford, Belmont, Boston, Boxborough, Braintree, Brighton, Brookline, Burlington, Cambridge, Canton, Carlisle, Chelsea, Cohasset, Concord, Dedham, Dorchester, Dover, Foxboro, Framingham, Hingham, Holbrook, Holliston, Hopkinton, Hudson, Hull, Lexington, Lincoln, Littleton, Marlborough, Maynard, Medfield, Millis, Milton, Natick, Needham, Newton, Norfolk, Northborough, Norwell, Norwood, Quincy, Randolph, Revere, Roslindale, Scituate, Sharon, Sherborn, Somerville, Southborough, Stow, Sudbury, Walpole, Waltham, Watertown, Wayland, Wellesley, Westborough, Weston, Westwood, Weymouth, Wilmington, Winchester, Winthrop, Woburn, and Wrentham.

Overall Patient Panel

A. Beth Israel Lahey Health

BILH is an integrated health care delivery system of teaching and community hospitals, physician groups, behavioral health providers, post-acute care providers and other caregivers serving patients in Greater Boston² and the surrounding communities in Eastern Massachusetts and Southeastern New Hampshire. BILH aims to have a broader impact on the health care industry and patient populations in Massachusetts by sharing best practices, investing in foundational infrastructure to support population health management, and encouraging competition based on value.

BILH also operates Beth Israel Lahey Health Performance Network, LLC (“BILHPN”), a clinically integrated network of physicians, clinicians, and hospitals. BILHPN is a Health Policy Commission (“HPC”) certified Accountable Care Organization (“ACO”) committed to providing high-quality, cost-effective care to the patients and communities they serve, while effectively managing medical expense. By leveraging best practices in population health management and data analytics, BILHPN seeks to improve care quality and patient health outcomes across the system through population health initiatives.

Patient Panel

It is estimated that five million people reside in the BILH service area.³ This area has experienced 6.4% population growth since 2010 and is projected to increase at a faster rate (4.5%) than the state (3.5%) from 2017 to 2022.⁴ As demonstrated in Table 1, the BILH Patient Panel consisted of 1,633,109 patients in fiscal year⁵ (“FY”) 2022, an increase of 34% from FY20. The following table illustrates the demographics of BILH’s Patient Panel.

Table 1: BILH Patient Panel Demographics

Demographic Measure	FY2020 Count	FY2020 Percent	FY2021 Count	FY2021 Percent	FY2022 Count	FY2022 Percent
Total	1,219,718	100%	1,427,711	100%	1,633,109	100%
Age - 0 to 17	82,569	6.77%	93,835	6.57%	180,927	11.08%
Age - 18 to 64	784,319	64.30%	924,797	64.77%	993,510	60.84%
Age - 65+	352,830	28.93%	409,080	28.65%	458,672	28.09%
Gender - Male	541,252	44.38%	630,371	44.15%	647,251	39.63%
Gender - Female	677,915	55.58%	796,777	55.81%	983,566	60.23%
Gender - Other ⁶	551	0.05%	563	0.04%	2,292	0.14%
Race - White	908,726	74.50%	1,022,257	71.60%	1,209,253	74.05%
Race - Black or African American	58,869	4.83%	69,537	4.87%	89,020	5.45%
Race - American Indian or Alaska Native	1,404	0.12%	1,610	0.11%	2,134	0.13%
Race - Asian	71,333	5.85%	79,440	5.56%	105,352	6.45%

² Greater Boston includes the following cities/towns: Acton, Arlington, Ashland, Bedford, Belmont, Boston, Boxborough, Braintree, Brighton, Brookline, Burlington, Cambridge, Canton, Carlisle, Chelsea, Cohasset, Concord, Dedham, Dorchester, Dover, Foxboro, Framingham, Hingham, Holbrook, Holliston, Hopkinton, Hudson, Hull, Lexington, Lincoln, Littleton, Marlborough, Maynard, Medfield, Millis, Milton, Natick, Needham, Newton, Norfolk, Northborough, Norwell, Norwood, Quincy, Randolph, Revere, Roslindale, Scituate, Sharon, Sherborn, Somerville, Southborough, Stow, Sudbury, Walpole, Waltham, Watertown, Wayland, Wellesley, Westborough, Weston, Westwood, Weymouth, Wilmington, Winchester, Winthrop, Woburn, and Wrentham.

³ Census Reporter, Boston-Cambridge-Newton, MA-NH Metro Area, <https://censusreporter.org/profiles/31000US14460-boston-cambridge-newton-ma-nh-metro-area/>.

⁴ UMass Donahue Institute, *Long-term Population Projections for Massachusetts Regions and Municipalities*, March 2015.

⁵ For purposes of the Applicant’s and the Hospital’s patient panel, the fiscal year is defined as July 1 through June 30.

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

Race - Native Hawaiian or Other Pacific Islander	778	0.06%	985	0.07%	1,139	0.07%
Race - Other ⁷	110,929	9.09%	127,248	8.91%	108,684	6.66%
Race - Unknown	59,190	4.85%	106,325	7.45%	93,208	5.71%
Race - Patient Declined	8,489	0.70%	20,309	1.42%	24,319	1.49%
Ethnicity ⁸ - Hispanic/Latino	51,758	5.05%	70,402	6.00%	82,903	5.95%
Ethnicity - Not Hispanic/Latino	875,383	85.43%	959,434	81.75%	1,120,228	80.38%
Ethnicity - Patient Declined	28,549	2.79%	41,950	3.57%	40,490	2.91%
Ethnicity - Unknown	54,010	5.27%	70,531	6.01%	102,618	7.36%
Ethnicity - Other	14,974	1.46%	31,372	2.67%	47,509	3.41%
Payer Mix - Commercial	610,845	50.08%	687,224	48.13%	869,337	53.23%
Payer Mix - Medicare	320,062	26.24%	363,058	25.43%	424,855	26.02%
Payer Mix - Medicaid	143,168	11.74%	173,940	12.18%	165,605	10.14%
Payer Mix - Multiple Payers	79,086	6.48%	85,629	6.00%	43,266	2.65%
Payer Mix - Other ⁹	57,565	4.72%	109,545	7.67%	130,033	7.96%
Payer Mix - Unknown	8,992	0.74%	8,315	0.58%	13	0.00%

Age – Data for FY20-FY22 show that the majority of BILH's Patient Panel is between 18 to 64, followed by 65+ and 0-17 age cohorts, respectively.

Gender – BILH's Patient Panel is approximately 57.20% female, 42.72% male, and 14.48% Other. These percentages remained largely unchanged between FY20 and FY22.

Race – Approximately 73.38% of the Patient Panel self-identify as White.

Ethnicity – Approximately 82.52% of the Patient Panel self-identify as Not-Hispanic/Latino.

Payer Mix – Commercial payers are the primary payer source (at approximately 50.48%), followed by Medicare (approximately 25.90%).

B. Beth Israel Deaconess Hospital - Plymouth

In FY22, BID Plymouth's overall patient panel included 83,796 unique patients, up 9.6% from FY19. Patients aged 65+ were the largest patient cohort, making up almost 35% of unique patients. An additional 30.1% of patients were aged 46-64. Patients aged 0-44 accounted for 34.9% of unique patients in FY22. 60% of patients were female, compared to 40% male. 89.1% of patients self-identified as White, as well as 2.1% who identified as Black/African American and 0.6% as Asian. Approximately 6.7% of patients declined to report their race. Approximately 40% of patients were covered by a commercial insurance plan, compared to 31% who were insured through Medicare, 17% through Medicaid, and 13.4% who had another source of coverage.

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."

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

Table 1: BID Plymouth Patient Panel Demographics

	FY2020 Count	FY2020 Percent	FY2021 Count	FY2021 Percent	FY2022 Count	FY2022 Percent
Total	76,447	100%	89,731	100%	83,796	100%
Age - 0 to 17	7,076	9.26%	7,662	8.54%	7,171	8.6%
Age - 18 to 25	5,240	6.85%	5,688	6.34%	5,095	6.1%
Age - 26-45	15,240	19.94%	18,599	20.73%	16,955	20.2%
Age - 46-64	23,494	30.73%	28,335	31.58%	25,214	30.1%
Age – 65+	25,397	33.22%	29,447	32.82%	29,361	35.0%
Gender - Male	30,865	40.37%	36,446	40.62%	33,501	40.0%
Gender - Female ¹⁰	45,582	59.63%	53,285	59.38%	50,295	60.0%
Race - White	69,598	91.04%	77,891	86.81%	74,669	89.1%
Race - Black or African American	1,575	2.06%	1,759	1.96%	1,731	2.1%
Race - American Indian or Alaska Native	65	0.09%	75	0.08%	69	0.1%
Race - Asian	455	0.60%	527	0.59%	534	0.6%
Race - Native Hawaiian or Other Pacific Islander	25	0.03%	32	0.04%	35	0.0%
Race - Other ¹¹	835	1.09%	967	1.08%	1,148	1.4%
Race - Patient Declined	3,894	5.09%	8,480	9.45%	5,610	6.7%
Ethnicity - Hispanic/Latino	606	0.79%	562	0.63%	1,364	1.49%
Ethnicity - Not Hispanic/Latino	26,623	34.83%	26,713	29.77%	68,765	75.35%
Ethnicity - Unknown	49,297	64.49%	62,482	69.63%	21,128	23.15%
Payer Source - Commercial	32,633	42.7%	36,290	40.5%	34,186	38.1%
Payer Source - Medicaid	13,477	17.6%	15,655	17.5%	15,329	17.1%
Payer Source - Medicare	24,683	32.3%	27,550	30.7%	28,114	31.3%
Payer Source - Other ¹²	5,636	7.4%	9,741	10.9%	6,053	13.4%
Payer Source - Unknown	-	0.0%	431	0.5%	114	0.1%

Of BID Plymouth's patient panel, 58% originated from Plymouth and the immediately surrounding towns while 74% of patients originated from southern Plymouth County as detailed in Table 2.

¹⁰ For confidentiality, "Female" includes patients whose gender is other or unknown.

¹¹ "Other" is a choice for patients to select if they do not feel that their race/ethnicity is reflected in the list of choices.

¹² Includes self-pay, health safety net, and liability coverage other than worker's compensation for an injury event.

Table 2: BID Plymouth Patient Panel Geographic

Location	FY2020	FY2021	FY2022
Plymouth	30,037	33,159	32,151
Carver	4,760	5,212	4,984
Kingston	4,408	4,772	4,663
Middleboro	3,367	3,707	3,677
Duxbury	2,985	3,437	3,718
Marshfield	2,646	2,967	2,734
Buzzard's Bay	1,851	2,177	2,163
Pembroke	1,770	2,100	1,979
Sandwich	1,392	1,629	1,533
Halifax	1,243	1,369	1,240
Sagamore Beach	1,220	1,338	1,307
Plympton	901	982	1,006
Wareham	802	965	912

Radiation Oncology Panel

In FY22, BID Plymouth saw 436 unique patients for radiation oncology treatment. The majority of patients were aged 65 and over (~74%). 52% of patients were female and 47% of patients were male.

Table 3: BID Plymouth Radiation Oncology Panel Demographics

Demographic	FY2020 Count	FY2020 Percent	FY2021 Count	FY2021 Percent	FY2022 Count	FY2022 Percent
Total Unique Patients	311	100%	366	100%	436	100%
Age – Under 65	74	23.79%	95	25.96%	113	25.92%
Age – Over 65	237	76.21%	271	74.04%	323	74.08%
Gender - Female	190	61.09%	166	45.36%	229	52.52%
Gender – Male	121	38.91%	200	54.64%	207	47.48%

As shown in Table 4, more than half (~59%) of BID Plymouth's radiation oncology patients originated from Plymouth, Middleboro, Carver, Duxbury, and Kingston, with additional patients originating from other localities within Southern Plymouth County.

Table 4: BID Plymouth Radiation Oncology Patient Panel Geographics¹³

Location	FY2020	FY2021	FY2022
Plymouth	126	146	148
Middleboro	22	20	31
Carver	23	31	30

¹³ The patient count is not provided for localities with fewer than 13 patients.

Duxbury	-	-	21
Kingston	14	16	18
Pembroke	-	-	13
Plympton	-	-	-
Marshfield	-	17	-
Sandwich	-	-	-
Halifax	-	-	-
Buzzards Bay/Bourne	-	-	-
East Falmouth	-	-	-
Scituate	-	-	-
Wareham/East Wareham	-	-	-
Pocasset	-	-	-

F1.a.ii Need by Patient Panel:

Provide supporting data to demonstrate the need for the Proposed Project. Such data should demonstrate the disease burden, behavioral risk factors, acuity mix, health disparities, or other objective Patient Panel measures as noted in your response to Question F1.a.i that demonstrates the need that the Proposed Project is attempting to address. If an inequity or disparity is not identified as relating to the Proposed Project, provide information justifying the need. In your description of Need, consider the principles underlying Public Health Value (see instructions) and ensure that Need is addressed in that context as well.

The Applicant requests DoN approval to resume use of a currently dormant linear accelerator (“LINAC”). Through the Proposed Project, the Applicant seeks to ensure that the Hospital will be able to reliably provide high-quality, state-of-the-art radiation therapy in a convenient and timely manner to all patients. As reflected in the data below, BID-P has experienced a significant increase in new radiation therapy patients overall, with a particular increase in stereotactic body radiation therapy (“SBRT”) patients, a newer form of radiation therapy that is especially promising for patients who previously had limited treatment options. As described below, BID-P’s active LINAC is currently well above the recommended average of patients per machine and has been for several years. BID-P projects that it will remain above that average as the number of radiation therapy patients increases. Further, the increase in radiation therapy patients and in SBRT, which has a longer time per treatment, has resulted in less flexibility in scheduling, as the Applicant is currently limited to scheduling patients on its single LINAC machine. Lastly, while downtime on the Hospital’s active LINAC is currently minimal, there is a significant risk that the ongoing high demand on the machine will, in turn, lead to increasing downtime. Therefore, a second LINAC unit is needed to ensure convenient and continued access for BID-P’s patients to high-quality radiation therapy in the community.

Historic Utilization

As demonstrated in F1.a.i, the BID-P patient panel increased by almost 10% between FY20 and FY22. With respect to radiation therapy utilization, from FY20 to FY22, BID-P experienced an approximately 40% overall increase in the number new treatment starts, including a 67.4% increase in new SBRT starts. The increase in SBRT starts is significant, as the average SBRT treatment time is currently one hour, compared to 10 minutes for more conventional forms of radiation therapy.

Table X: BID-Plymouth Historical Utilization

Treatment type	FY2020	FY2021	2022
New Starts: All Radiation Therapy	311	366	436
New Starts: Stereotactic Body Radiation Therapy	15	18	46
Total LINAC Treatments	6,870	8,217	7,945

Impact of High Utilization on Access

The utilization of the existing unit at 436 new treatment starts for FY22 is well above the recommended average of 237 patients per treatment machine.¹⁴ As the Hospital cannot extend hours of operation to accommodate demand, patients are waiting longer to start radiation therapy so that they can schedule their treatments at a convenient time. The capacity issues with the existing machine reduce the Hospital's ability to provide such flexibility to patients who are working or providing childcare, which impacts health equity. For example, the Hospital is aware of breast cancer patients who have waited several weeks to begin treatment in order to receive care at a time that fits conveniently into their schedule.

Impact of Downtime and Need for Redundancy

A second LINAC unit is necessary to provide timely access to radiation therapy due to concerns that the existing LINAC will increasingly require routine and unanticipated downtime as it is burdened with high utilization, with nearly 200 more new treatment starts than recommended. This overutilization of the existing LINAC will result in the unit requiring increasing amounts of downtime and potentially decreasing its useful life. A second LINAC unit is necessary to maintain the existing LINAC for as long as possible and reduce the potential for downtime.

Projected Growth and Future Demand

In addition to historical increases in radiation therapy volume, BID-P expects that new start volume will continue to grow as the Hospital's patient panel ages. With this aging, BID-P anticipates that patients will present with higher incidence of cancer and more frequently require radiation therapy. These age-based demand considerations are especially important for future planning for BID-P's radiation oncology department. In Plymouth County, where the majority of BID-P's patients reside, the 65+ age cohort is projected to grow 17% between 2020 and 2025.¹⁵ Given that ~74% of patients who received radiation treatment at BID-P were ages 65+, this anticipated growth in the Plymouth region will increase the number of older adults requiring radiation therapy due to higher incidence of cancer with age.

The Advisory Board Cancer Incidence Estimator expects that cancer incidence in BID-P's service area and surrounding counties will increase by 9.6% between 2020 and 2025 and by nearly 17% between 2020 and 2030.¹⁶ The ten forms of cancer that are most prevalent among BID-P's radiation oncology patients are prostate, breast, lung, head and neck, colorectal, bone, gastrointestinal ("GI"), brain, skin, and lymphoma/leukemia. Notably, BID-P expects the incidence of eight of those ten cancers to increase by more than 10% between 2020 and 2030. Certain types of cancer that are already prevalent among BID-P patients, such as hematologic cancers and lung and bronchus cancers, are expected to increase by more than 10%.

Additionally, the Hospital expects to see a sustained higher volume of SBRT treatments, which take longer per treatment than conventional radiation therapy, thereby decreasing the number of available appointments. The Advisory Board's Oncology Outpatient Market Estimator anticipates that the number of

¹⁴ Katie Albus, *Personnel: Radiation Oncology*, AMERICAN COLLEGE OF RADIOLOGY (Jul. 18, 2023),

<https://accreditation-support.acr.org/support/solutions/articles/11000049781-personnel-radiation-oncology-revised-8-2-2022->

¹⁵ *Massachusetts Population Projections*, UMASS DONAHUE INSTITUTE POPULATION ESTIMATES PROGRAM (last visited Sept. 20, 2023), <http://www.pep.donahue-institute.org/>.

¹⁶ *Cancer Incidence Estimator*, ADVISORY BOARD, <https://www.advisory.com/topics/oncology/2020/06/cancer-incidence-estimator> (last visited Aug. 31, 2023).

patients requiring SBRT in BID-P's service area and surrounding counties will increase by approximately 40% from 2020 to 2025 and by nearly 50% from 2020 to 2030.¹⁷ This rapid increase in the use of SBRT is consistent with the significant increase that BID-P experienced from 2020 to 2022. SBRT is a particularly promising treatment option for patients with smaller tumors and for whom surgery may be risky due to the location of the tumor.¹⁸ For those reasons, SBRT is primarily used to treat early-stage lung cancer and pancreatic cancer, as well as cancers that have spread to the lung, liver, adrenal gland, and spine.¹⁹ This is notable because BID-P expects that cancers of the lung and bronchus and cancers in the GI system (which includes the pancreas) will be the cancers with the first and third highest growth by 2030 in the primary service area. Specifically, BID-P anticipates that the incidence of cancers of the lung and bronchus will increase by 24.1% between 2020 and 2030, and cancers of the GI system will increase by 19.7% in the same time. Therefore, it is important that BID-P have the capacity to treat these cancers using high quality and state-of-the-art technology.

The following table details radiation therapy volume projections following implementation of the Proposed Project.

Table X: BID-Plymouth Projected Utilization

Treatment Type	FY2024	FY2025	FY2026	FY2027	FY2028
New Starts: All Radiation Therapy	466	490	509	523	536
New Starts: Stereotactic Body Radiation Therapy	66	81	91	96	101
Total LINAC Treatments	8,222	8,452	8,665	8,860	9,026

The Proposed Project primarily stems from the need to shift a portion of LINAC demand to an additional unit. The benefit of this shift is three-fold. First, providing radiation therapy across two units will decrease the strain on the current LINAC and ultimately reduce the amount of downtime on the existing machine, in turn prolonging the useful life of both units. Second, adding a second machine will provide patients with greater flexibility in scheduling appointments and thus, improve compliance with treatment. Third, the second unit will provide capacity to accommodate the increased number of radiation oncology patients, particularly the increasing number of SBRT patients, in the Patient Panel. Finally, all three of the aforementioned improvements will increase access to timely, high-quality care in their local community.

F1.a.iii Competition:

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

The Proposed Project will compete on the basis of price, total medical expenses, provider costs, and other recognized measures of health care spending by improving access to and reliability of timely outpatient cancer services in the community. Notably, the Applicant will utilize an existing resource without the need for a significant capital expenditure to recommission the unit. The Proposed Project necessary to ensure that access to high-quality cancer services remain available to BID-P's patients close to home and on a timely basis, thereby reducing the cost of care.

The Proposed Project will allow the Applicant to ensure the provision of cost-effective radiation oncology services and prevent cost-increasing delays in treatment.²⁰ Currently, the Applicant's patient volume for its existing LINAC is well above the national average, to the point of being almost double the national average

¹⁷ *Oncology Market Estimator*, ADVISORY BOARD, <https://www.advisory.com/topics/oncology/2019/05/oncology-market-estimator> (last visited Aug. 31, 2023).

¹⁸ *FAQs: SBRT (Stereotactic Body Radiation Therapy)*, UCLA HEALTH, <https://www.uclahealth.org/departments/radonc/research-technologies/innovation-technology/external-beam-radiation-therapy-ebrt/stereotactic-body-radiation-therapy-sbirt/faqs-sbirt#benefit> (last visited Aug. 31, 2023).

¹⁹ Kavitha Prezzano et al., *Stereotactic Body Radiation Therapy for Non-Small Cell Lung Cancer: A Review*, 10 WORLD J. CLINICAL ONCOLOGY 14, 14-27 (2019); Maged Ghaly et al., *New Potential Options for SBRT in Pancreatic Cancer*, 4 CANCER MEDICINE J. (Supplement 3) 41, 41-50 (2021); Chia-Lin Tseng et al., *Spine Stereotactic Body Radiotherapy: Indications, Outcomes, and Points of Caution*, 7 GLOBAL SPINE J. 179, 179-197 (2017).

²⁰ See *infra* notes 43-51 and accompanying text.

in 2022. This high demand for radiation therapy on a single LINAC results in decreased flexibility in scheduling options for treatment. Further, if BID-P's existing LINAC has technological issues, there is currently no back-up machine, which could lead to prolonged delays in treatment or rescheduled appointments.

The addition of a LINAC will provide increased scheduling flexibility for patients, allowing patients to get quicker treatment at their preferred times. The Proposed Project will advance cost containment goals through timely treatment, as well as improved compliance, which may lessen the burden of disease on the patient and avoid the costs associated with delayed treatment.

Additionally, the number of patients starting SBRT significantly increased in 2022 and is expected to remain at an elevated level in the future. Studies have shown that SBRT is a more cost-effective treatment than other forms of radiation therapy.²¹ However, each individual SBRT treatment currently lasts about one hour, compared to an average treatment time of about 10 minutes for conventional radiation therapy. Due to the longer treatment times for SBRT and the performance of both SBRT and conventional radiation therapy on a single LINAC machine, the Hospital is currently limited in its ability to meet the demand for this form of treatment. The Proposed Project will allow the Applicant to meet the demand for this type of treatment, thereby reducing health care costs.

Preventing long wait times, increasing flexibility, and ensuring the reliability of BID-P's radiation therapy will also guarantee that patients can receive care in the community where they live. Without the addition of a LINAC, BID-P will be unable to provide reliable and convenient radiation therapy treatments, including for SBRT, and current and future patients may need to seek services farther from home and potentially outside of the BILH network. Therefore, the Proposed Project will compete on the basis of price and health care spending by ensuring reliable access to timely and cost-effective radiation treatment close to home.

Public Health Value /Evidence-Based:

Provide information on the evidence-base for the Proposed Project. That is, how does the Proposed Project address the Need that Applicant has identified.

Evidence-based literature supports the importance of access to radiation therapy for oncology patients and in turn, supports the need for the Proposed Project, which will allow the Applicant to meet the demand for such services in the community.

Role of Linear Accelerators in Radiation Therapy

External Beam Radiation Therapy

The most common form of radiation therapy is external beam radiation therapy because of its ability to serve as the only form of treatment, in conjunction with surgery or chemotherapy, or as a palliative therapy to relieve a patient's symptoms.²² External radiation is typically delivered using a linear accelerator, or LINAC. The machine produces high energy x-rays or electrons that are able to precisely target the tumor while leaving the surrounding healthy tissue intact.²³ During the treatment, patients are positioned on a moveable treatment couch that can be moved so that the patient does not move during the treatment.²⁴ Additionally, the LINAC's beam can be rotated around the patient, further ensuring radiation is delivered directly to the tumor.²⁵ Over the course of a patient's treatment, the cancer cells will be destroyed, in turn stopping the growth of the tumor and the disease.²⁶ Importantly, treatments using external radiation technology can be highly customized depending on the patient and their cancer. For example, patients whose tumors are located in close proximity to key organs may be eligible for Intensity-modulated radiation

²¹ David J. Sher et al., *Cost-Effectiveness Analysis of SBRT Versus IMRT for Low-Risk Prostate Cancer*, 37(3) AM. J. CLINICAL ONCOLOGY 215-221 (2014); James B. Yu et al., *Stereotactic Body Radiation Therapy Versus Intensity-Modulated Radiation Therapy for Prostate Cancer: Comparison of Toxicity*, 32(12) J. CLINICAL ONCOLOGY 1195- 1200 (2014).

²² NAT'L CANCER INSTITUTE, *Radiation Therapy to Treat Cancer* (updated Jan. 8, 2019), <https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy> [hereinafter NCI, *Radiation Therapy*].

²³ NAT'L CANCER INSTITUTE, *Types of Radiation Therapy*, <https://training.seer.cancer.gov/treatment/radiation/types.html>.

²⁴ Sarah Hegarty et al., *Please Place Your Seat in the Full Upright Position: A Technical Framework for Landing Upright Radiation Therapy in the 21st Century*. 12 FRONTIERS ONCOLOGY (Article) 821887 (2022).

²⁵ *Id.*

²⁶ NCI, *Radiation Therapy*, *supra* note 22.

therapy (“IMRT”).²⁷ Additional forms of external radiation include stereotactic radiosurgery (“SRS”) and stereotactic body radiation therapy (“SBRT”).²⁸ Both treatments deliver a high dose of radiation to the head or body, respectively, resulting in outcomes so precise, they’re equated to surgery.²⁹

Intensity-Modulated Radiation Therapy

As noted above, IMRT is a form of external beam radiation therapy that uses smaller beams of radiation to minimize damage to surrounding tissue.³⁰ IMRT allows for a more precise radiation dose that conforms to the shape of the tumor by regulating the intensity of the radiation beam in multiple small volumes.³¹ This requires that the treatment be carefully planned, including computerized dose calculations to determine the most appropriate dose intensity pattern.³² During the treatment, combinations of multiple intensity-modulated fields coming from different beam directions provide the maximum radiation dose to the tumor determined during planning.³³ By providing a higher radiation dose on the tumor, IMRT is able to minimize exposure elsewhere.³⁴ Moreover, treatment toxicity may be lessened. However, given the additional time needed for planning, overall treatment times are longer than with conventional radiation therapy, including time to start and daily treatments.³⁵

Stereotactic Treatment

SRS and SBRT are noninvasive methods of treating tumors in the brain (SRS) and throughout the body (SBRT) with very precise, high-dose radiation beams delivered in one to five outpatient procedures.³⁶ During treatment, patients lie comfortably while the advanced cancer treatment system targets their tumor and delivers numerous high-dose radiation beams directly to the tumor while sparing surrounding healthy tissue. SRS and SBRT do not require surgery or sedation, and patients typically experience minimal side effects due to the highly focused nature of treatment, which minimizes radiation exposure to normal tissue and organs.³⁷ Initial studies suggest that, despite its minimal side effects and shorter treatment times, SBRT and SRS are at least as effective as conventional radiation therapy,³⁸ and that SBRT is as effective as surgery for certain patients.³⁹ SBRT is a particularly useful treatment option for patients with small tumors and patients who are poor candidates for surgery,⁴⁰ and it is primarily used to treat early-stage lung cancer and pancreatic cancer, as well as cancers that have spread to the lung, liver, adrenal gland, and spine.⁴¹ SRS is commonly used to treat brain tumors, as well as cancers in the neck, lungs, liver, spine.⁴²

²⁷ A Taylor & MEB Powell, *Intensity-Modulated Radiotherapy--What Is It?* 4 CANCER IMAGING 68, 68-73 (2004).

²⁸ NAT'L CANCER INSTITUTE, *External Beam Radiation Therapy for Cancer* (May 1, 2018), <https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/external-beam> [hereinafter NCI, *External Beam*].

²⁹ See, e.g., Zhen Liu et al., *Comparison of Surgical Resection and Stereotactic Radiosurgery in the Initial Treatment of Brain Metastasis*, 98 STEREOTACTIC & FUNCTIONAL NEUROSURGERY 404, 404-415 (2020); Joe Y Chang et al., *Stereotactic Ablative Radiotherapy Versus Lobectomy for Operable Stage I Non-Small-Cell Lung Cancer: A Pooled Analysis of Two Randomised Trials*, 16 LANCET ONCOLOGY 630, 630-7 (2015).

³⁰ See AM. COLL. RADIOLOGY, *ACR-ARS Practice Parameter for Intensity-Modulated Radiation Therapy (IMRT)* (2021), <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/imrt-ro.pdf>; NCI, *External Beam*, *supra* note 30.

³¹ *Id.*

³² *Id.*

³³ *Id.*

³⁴ *Id.*; Taylor & Powell, *supra* note 27.

³⁵ WEILL CORNELL MEDICINE, *RADIATION ONCOLOGY, IMRT*, <https://radiationoncology.weillcornell.org/clinical-services-and-technologies/external-beam-radiation-therapy/imrt>.

³⁶ NCI, *External Beam*, *supra* note 30.

³⁷ JOHNS HOPKINS MEDICINE, *Stereotactic Radiosurgery*, <https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/stereotactic-radiosurgery>.

³⁸ Joseph Abi Jaoude, *Stereotactic Versus Conventional Radiation Therapy for Patients With Pancreatic Cancer in the Modern Era*, 6 ADVANCES RADIATION ONCOLOGY 100763 (2021); J. Li et al., *Stereotactic Radiosurgery Versus Whole-brain Radiation Therapy for Patients with 4-15 Brain Metastases: A Phase III Randomized Controlled Trial*, 108 INT'L J. RADIATION ONCOLOGY, BIOLOGY, PHYSICS (Supplement) S21-S22 (2020).

³⁹ Ashwin Shinde et al., *Stereotactic Body Radiation Therapy (SBRT) for Early-Stage Lung Cancer in the Elderly*, 45 SEMINARS ONCOLOGY 210-219 (2018).

⁴⁰ J.K. Jang et al., *Temporal Trends in the Utilization of Stereotactic Body Radiotherapy for Non-Small Cell Lung Cancer in the United States*, 105 INT'L J. RADIATION ONCOLOGY, BIOLOGY, PHYSICS (Supplement 2019) E511 (2019).

⁴¹ See *supra* note 19 and accompanying text.

⁴² MAYO CLINIC, *Stereotactic Radiosurgery*, <https://www.mayoclinic.org/tests-procedures/stereotactic-radiosurgery/about/pac-20384526>.

Timeliness and Proximity of Care

Studies suggest that the timeliness of radiation therapy affects the efficacy of treatment outcomes and overall patient survival.⁴³ Specifically, delays in the start time of radiation treatment over a certain number of days may be associated with worse overall survival.⁴⁴ Accordingly, the National Comprehensive Cancer Network recommends that radiation treatment start within six weeks of surgery, for patients who receive such therapy after surgery.⁴⁵ Delayed treatment start times also negatively impact patient satisfaction and experience.⁴⁶

In addition to timely access to care, there is evidence that proximity to care is associated with care utilization and health outcomes. In a review of a number of studies, further distances between a patient's home and their healthcare facilities demonstrated poorer health outcomes.⁴⁷ Moreover, there is evidence of reduced rates of radiation therapy for patients living farther away from radiation facilities than those living nearby.⁴⁸ Similarly, greater travel time has been associated with delayed diagnosis.⁴⁹ In addition to poorer health outcomes related to the patient's specific diagnosis, there is evidence that the time spent traveling to receive health care services, as well as costs associated to traveling, physically impacts individuals and is a source of additional stress.⁵⁰ Proximity to care and minimal travel time to health care facilities become increasingly important factors for access to care as adults age because of potential barriers to transportation for those adults who no longer drive or do not have a support system for reliable transportation to appointments.⁵¹ Radiation therapies are often performed over a period of time and will require the patient to return for treatment multiple times a week, month, or over longer periods of time. Therefore, access to care within the patient's community is necessary for improving treatment completion rates. In conclusion, health outcomes are better when individuals live close to the health care facilities that can address the full spectrum of health care needs.

F.1.b.ii Public Health Value /Outcome-Oriented:
Describe the impact of the Proposed Project and how the Applicant will assess such impact. Provide projections demonstrating how the Proposed Project will improve health outcomes, quality of life, or health equity. Only measures that can be tracked and reported over time should be utilized.

To assess the impact of the proposed Project, the Applicant will report on the following measures of patient satisfaction and quality of care. The measures are discussed below and will be reported to DPH on an annual basis following implementation of the Proposed Project.

A. LINAC Project

- 1. Patient Satisfaction:** Patients that are satisfied with their care are more likely to seek additional treatment when necessary.

Measure: Patient satisfaction scores will be used to determine the impact of the Proposed Project on quality of life.

Numerator = Number of top scores, such as "likely to recommend" or "highly satisfied".

⁴³ Nzhde Agazaryan et al., *The Timeliness Initiative: Continuous Process Improvement for Prompt Initiation of Radiation Therapy Treatment*, 5(5) ADVANCED RADIATION ONCOLOGY 1014-1021 (2020)..

⁴⁴ Jeremy P Harris et al., *Association of Survival With Shorter Time to Radiation Therapy After Surgery for US Patients With Head and Neck Cancer*, 144(4) JAMA OTOLARYNGOLOGY – HEAD & NECK SURGERY 349–359 (2018).

⁴⁵ *Id.*

⁴⁶ See Agazaryan et al., *supra* note 43.

⁴⁷ Jeremy Mattson, SMALL URBAN & RURAL TRANSIT CTR, *Transportation, Distance, and Health Care Utilization for Older Adults in Rural and Small Urban Areas* (2010), <https://www.ugpti.org/resources/reports/downloads/dp-236.pdf>

⁴⁸ Gabrielle B. Rocque et al., *Impact of Travel Time on Health Care Costs and Resource Use by Phase of Care for Older Patients With Cancer*, 37(22) J. CLINICAL ONCOLOGY 1935-1945 (2019).

⁴⁹ *Id.*

⁵⁰ Charlene A Winters et al., *The Rural Context and Women's Self- Management of Chronic Health Conditions*, 2 CHRONIC ILLNESS 273-289 (2006).

⁵¹ Mattson, *supra* note 47.

Denominator = Total number of survey respondents

Baseline: 98.2% based on 204 surveys completed by patients

Projections: 98.5-100% based on completion of 250 surveys

Monitoring: Results will be reviewed monthly by Theresa Grady, Manager.

2. **Treatment Access:** This measure will monitor the total number of patients who receive radiation therapy via LINAC at BID-P following implementation of the Proposed Project.

Measure: By tracking the number of patients treated using the LINAC, LHMC will be able to assess how the Proposed Project has improved access.

Baseline: 436 New Start Patients in 2022

Projections: 466 New Start Patients in 2024

Monitoring: Results will be reviewed monthly by Theresa Grady, Manager.

F1.b.iii

Public Health Value /Health Equity-Focused:

For Proposed Projects addressing health inequities identified within the Applicant's description of the Proposed Project's needbase, please justify how the Proposed Project will reduce the health inequity, including the operational components (e.g. culturally competent staffing). For Proposed Projects not specifically addressing a health disparity or inequity, please provide information about specific actions the Applicant is and will take to ensure equal access to the health benefits created by the Proposed Project and how these actions will promote health equity.

The Proposed Project will work to reduce health inequity through increasing and improving access to radiation oncology therapies to all members of BID-P's community, in particular to working patients with limited scheduling options. BID-P welcomes all patients and does not discriminate on the basis of age, race, ethnicity, gender/gender-identity, physical ability, sensory or speech limitations, or religious, spiritual and cultural beliefs, nor a patient's ability to pay or payer source. BID-P has implemented the following initiatives to facilitate equitable access to its services, including radiation oncology.

A. Ensuring Language Accessibility

BID-P is committed to ensuring doctors, nurses and all healthcare providers and staff have the resources to be able to establish a direct relationship with their non-English or limited English-speaking patients, as well as their deaf and hearing-impaired patients. Language services are available to patients and families at no charge. BID-P offers language services in person, video remotely, and telephonically. These services are available for over 100 different languages and can be used 24 hours/7 days a week. Trained medical interpreters act as a conduit to facilitate communication between patients, families, staff, and healthcare providers. In addition, BID-P's medical interpreters assist patients and family members with outpatient testing and treatment, during hospitalizations and in the Emergency Department. Trained medical interpreters inform patients and families about procedures, medications, social services, financial topics, and other important information.

As its Patient Panel grows in both size and diversity, the Hospital's Interpreter Services Department has expanded to meet its patients' needs. The number of requested and completed language services encounters in FY 2021 was 5,235 and increased to 8,111 in FY 2022. BID-P currently employs one (1) full time medical interpreter/coordinator and one (1) per diem medical interpreter. In addition, BID-P has 12+ iPads, at least one in each unit, used for video remote interpreting (VRI), which helps reduce wait times and increases effectiveness and efficiency of language services. BID-P is also currently contracted with three vendors to meet language demands: two that provide VRI and OPI (over the phone) language services and two that provide in person/on site interpreters.

BID-P also facilitates communication with deaf and hard of hearing (DHH) patients and family members. BID-P contracts with Baystate Interpreters and AMN Healthcare to provide in person/on site spoken language and American Sign Language (ASL) interpreters. In addition, assistive listening devices, such as PocketTalkers and telephone volume amplifiers, are available to assist DHH patients.

B. Admission Screenings

BID-P also addresses health equity by proactively addressing social determinants of health that may interfere with patient care. All patients are screened at the time of consultation by nursing staff to determine their home situation, smoking status, any drug and/or alcohol usage, and supportive services, including family members and any transportation barriers. Patients are also screened for mental health concerns during this visit. Social Work and/or appropriate medical referrals are made based on this information. During the second week of radiation treatment, all patients are screened again to assess for stressors that might be interfering with care, including emotional distress, financial barriers, housing, and transportation issues, as well as any trouble in access to care.

Based on these assessments, appropriate interventions are arranged as needed. Social Work referrals may be made to connect patients with services, including financial counseling, mental health services in the community, ride assistance programs, wig share programs, and physical therapy programs for patients who qualify.

C. REAL Data Collection

BILH recently launched a new initiative to consistently request more detailed and complete demographic information from patients in furtherance of an organizational culture that embraces diversity, equity, and inclusion. Capturing patient diversity demographics, including gender and race, ethnicity, and language ("REAL Data") is foundational to understanding and addressing health disparities in the community.

To that end, BILH created a multidisciplinary team of representatives from across the System including staff from patient access services, information services, nursing, social work, community benefits and community relations teams. Working with patient representatives, the multidisciplinary team established a standard set of data along with best practices and processes in order to more consistent capture the data in the electronic medical record ("EMR").

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

The Proposed Project will improve health outcomes and quality of life for BID-P's patient panel by maintaining and expanding access to radiation oncology treatments in Plymouth and by continuing to ensure those services are accessible to all members of the community it serves. Through expanded access to radiation therapy, the Hospital will be able to provide services to more individuals, and those individuals will not have to wait as long for an appointment at a time that works with their schedule. As further described in Section F1.b.i, delaying radiation therapy can reduce the efficacy of the treatment and a patient's survival rate. To that end, the Proposed Project seeks to increase timely access to oncology care for the Patient Panel close to home thereby improving health outcomes.

BID-P is committed to promoting health equity and to that end, will ensure patients can access the Hospital's services, can effectively communicate with their providers, and will be connected to services outside of the Hospital as required. As a result, the Applicant anticipates that the Proposed Project will result in improved patient care experiences and quality outcomes while promoting health equity.

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

The Proposed Project will improve care continuity and coordination of care for radiation oncology patients by maintaining LINAC access for BID-P patients. Without these services, patients would be forced to seek care significantly farther from home, and potentially outside of the BID-P system.

BID-P promotes care coordination and effective communication with primary care providers and specialists through an integrated medical record system. With respect to the Proposed Project, BID-P's EMR serves as the primary linkage between the Hospital's Radiology Oncology Department, affiliated specialists, and community primary care providers. In the first instance, the EMR allows BID-P's 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 study. Once the radiologist's report is complete, the EMR enables imaging results and information to be available to primary care and specialty physicians across the system and integrated into the patient's EMR. Formal reports are sent to all involved care team members, including primary care providers, at the start and completion of radiation treatment. The EMR also allows authorized providers outside of the Applicant to view their patients' records and send progress notes back for improved continuity of care. This integration ensures that the BID-P patient panel benefits from care coordination through better outcomes and improved quality of life as discussed in F1.b.i and ii.

In addition to maintaining an integrated medical record system, BID-P directly coordinates a variety of supportive care services to complement active chemotherapy and radiation therapy treatment. Nutritional and speech and swallowing evaluation and treatment is available to patients going through radiation therapy. The Hospital's Social Work department provides access to financial, transportation, and psychiatric support services. The "bridge to wellness" program offers patients complementary gym membership and individualized training. Physical Therapy and Occupational Therapy is available as both an inpatient and outpatient service.

Regular meetings are also held to integrate care coordination. Complex cases are reviewed by the multi-disciplinary tumor board, which meets weekly. Patients receiving concurrent chemotherapy and radiation therapy treatment are reviewed during a weekly coordination meeting involving members from medical & radiation oncology and supportive services. These meetings include nurse practitioners, nurses, radiation therapists, dietary & speech/swallow services, and social work. The Proposed Project will include care coordination by offering more scheduling options for treatment and providing equipment redundancy in case of failure.

Furthermore, BID-P participates in the MassHealth ACO Program through BIDCO, part of BILHPN and its clinically integrated network. In furtherance of the goals of the Program, BIDCO strives to increase access to high quality care for members who are more likely to have unmet Social Determinant of Health ("SDoH") needs than the commercially insured population. 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 BID-P providers, including a Population Health Management Tool that helps primary care physicians monitor patients' health and manage chronic conditions. BID-P's links to primary care providers are vital to providing high-quality care and promoting coordination of care. These primary care linkages will continue to enhance care for BID-P patients, including timely access to radiology services that will be achieved through the Proposed Project.

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

The Applicant carried out a diverse consultative process with individuals at various regulatory agencies and departments regarding the Proposed Project. The following individuals and agencies are some of those consulted regarding this Project:

- Dennis Renaud, Director, Determination of Need Program, Department of Public Health
- Katie Teague, Community Health Planning & Engagement Specialist, Bureau of Community Health and Prevention, Department of Public Health
- Elizabeth Maffei, Program Manager, Bureau of Community Health and Prevention, Department of Public Health
- Massachusetts Executive Office of Health and Human Services
- Health Policy Commission
- Center for Health Information and Analysis
- The Centers for Medicare & Medicaid Services

F1.e.i Process for Determining Need/Evidence of Community Engagement:

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

As more fully described in Section F1.a.ii, the Applicant determined the need for the Proposed Project because of the current overuse of its single LINAC machine and its Patient Panel's need for continued access to radiation therapy. In addition, the Applicant presented the Proposed Project to the Hospital's Patient and Family Advisory Committee and the Hospital's Community Benefits Advisory Committee to inform them of the Proposed Project and solicit their feedback in the development of the Proposed Project.

During each of the presentations described below, attendees were educated on the Applicant's proposed plans, including how the Proposed Project will benefit the Hospital's Patient Panel. Following the presentation, attendees were able to share feedback and ask the presenters questions.

First, the Proposed Project was presented to the Hospital's Patient and Family Advisory Committee on March 8, 2023. The presentation was attended by six (6) attendees and led by Dr. Daniel Canaday and Jennifer Murphy, Senior Director of Oncology and Infusion Services.

Second, the Proposed Project was presented to the Hospital's Community Benefits Advisory Committee on March 20, 2023. The presentation was attended by 18 attendees, including 4 attendees from the Hospital and 14 from the community.

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

As described in the previous section, the Proposed Project was presented to the Hospital's Community Benefits Advisory Committee on March 20, 2023, and the Patient and Family Advisory Committee on March 8, 2023. In addition, the Applicant published a legal notice for the Proposed Project in the Boston Herald on September 15, 2023, and in the Old Colony Memorial on September 14, 2023, and September 21, 2023, and posted a copy of the legal notice prominently on BID-P's website.

Factor 2: Health Priorities

Addresses the impact of the Proposed Project on health more broadly (that is, beyond the Patient Panel) requiring that the Applicant demonstrate that the Proposed Project will meaningfully contribute to the Commonwealth's goals for cost containment, improved public health outcomes, and delivery system transformation.

F2.a. Cost Containment:

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

The Proposed Project will meaningfully contribute to and further the Commonwealth's goals for cost containment by ensuring high-quality radiation therapy services are accessible and equitably available to every person at the lowest reasonable aggregate cost. The Proposed Project seeks to improve access to an essential component of oncology care. As discussed previously, timely and local access to cost-effective radiation therapy can reduce overall health care costs. Moreover, the Proposed Project seeks to use existing equipment in an existing space, rather than purchasing entirely new equipment or constructing any new space, thereby reducing the capital expenses of the project almost entirely. To that end, the Proposed

Project will meaningfully contribute to the Commonwealth's goals of cost containment by efficiently improving access to care and thereby lowering the overall cost of care.

F2.b. Public Health Outcomes:

Describe, as relevant, for each new or expanded service, how the Proposed Project will improve public health outcomes.

The Proposed Project will improve public health outcomes by providing patients timely, reliable, and convenient access to radiation oncology services in the community, thereby reducing travel time as well as delays in diagnosis and treatment. As discussed in Factor F1.a.ii, BID-P has experienced a 10% increase in radiation oncology patient volume since FY20 and is operating above the existing LINAC unit's capacity, resulting in a lack of flexibility for scheduling patients and a risk that services will be entirely unavailable if the LINAC requires maintenance. Historical utilization demonstrates an ongoing need for radiation oncology services, with the number of radiation patients likely to increase given aging and acuity trends. Increased capacity and access to LINAC services is required to not only meet current and future demands, but to provide timely access within the community. Improved access to these services will also further the patient care experience and patient satisfaction.

F2.c. Delivery System Transformation:

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

The Applicant will continue to work with patients and primary care providers to ensure patients are connected to services as needed. As described in Section F1.b.iii., BID-P conducts comprehensive admission screenings that address social determinants of health, including financial barriers to care, social support, housing and transportation issues, mental health problems, and other barriers to access. Based on the results of the screening, appropriate interventions are arranged, including Social Work referrals to connect patients to social service organizations or appropriate resources within the BILH system. Patients are screened again during their second week of radiation treatment to assess whether there are any barriers to care. As described in Section F1.c., regular meetings are held to coordinate a patient's care. These meetings include social workers to ensure that social determinants of health are being addressed.

Factor 5: Relative Merit

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

This Proposal: The Proposed Project is to re-activate use of a currently dormant Model 2100EX LINAC.

Quality: The Proposed Project is a superior option because of the significant impact it will have on patient outcomes, quality of life, and patient satisfaction. With expanded access to radiation therapy, BID-P will improve its capacity to treat more patients close to home (including with newer, state-of-the-art treatment types), maintain the reliability of services by having a back-up machine in case of unit downtime, and reduce wait times for convenient treatment times.

Efficiency: Because BID-P already owns and previously operated the 2100EX LINAC, it will not need to purchase any new equipment. Additionally, because the Hospital already operates one LINAC, it will be able to use existing staff to operate both machines concurrently without significant new staff.⁵²

Capital Expense: The capital expenses for the Proposed Project are \$34,500.

Operating Costs: The first-year operating expenses to reactivate the LINAC are anticipated to be \$377,470.

Alternative Proposal: Do not reactivate the second LINAC and continue to serve patients through the use of a single LINAC.

Alternative Quality: This alternative does not address the need of BID-P's patient population to have timely access to radiation therapy. This option would further limit scheduling options for patients, would limit the availability of machines for new SBRT treatment, and would place strain on the already over-capacity LINAC that the Hospital is currently using. Delays in treatment can adversely impact patient outcomes, quality of life, and patient satisfaction.

Alternative Efficiency: BID-P resources will continue to be strained under this alternative. When BID-P experiences LINAC downtime, patients will need to delay treatment or reschedule. This may result in patients seeking treatment further from home.

Alternative Capital Expenses: There are no capital expenses under this alternative.

Alternative Operating Costs: The operating costs will not include the additional \$377,470 that the Proposed Project requires.

Alternative Proposal: Purchase an entirely new LINAC, rather than re-activating the existing 2100 EX.

Alternative Quality: This alternative would achieve the same overall quality outcomes as re-activating the existing LINAC. However, it may not achieve them as quickly, as there are likely to be delays due to purchasing and installing a new machine.

Alternative Efficiency: Purchasing a new LINAC is a highly costly alternative to using the existing machine. Additionally, there will be delays in implementing the proposal, as the old machine would need to be removed and the new machine would need to be purchased and installed.

Alternative Capital Expenses: The total capital expenditure for purchasing a new LINAC is \$2,839,397.

Alternative Operating Costs: The operating costs would likely be the same as the Proposed Project.

Factor 6: Community Health Initiative

A. Community Health Initiative Monies

The breakdown of Community Health Initiative ("CHI") monies for the Proposed Project, based on its Maximum Capital Expenditure ("MCE") is as follows.

⁵² The Hospital anticipates the second scanner will require at most 0.5 additional full-time employees in the future and certain additional contracted services.

Category	Amount	Description
MCE	\$34,500	<i>MCE</i>
CHI Funding	\$1,725	<i>0.5% of the MCE</i>
Statewide CHI Contribution	\$1,725	<i>Amount to be paid by the Applicant to the Massachusetts Community Health Initiative Funds</i>

B. Community Health Initiative Contribution

As evidenced above, the amount of this CHI (\$1,725) makes it a Tier 1 project that could be pooled with an existing local CHI project. At this time, BID-Plymouth does not have an existing project with which to pool this CHI with. Given the small size of the CHI contribution and lack of pooling option, the Applicant and DPH have agreed it is appropriate to contribute the CHI dollars solely to the Statewide Fund.