

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of)
NSTAR Gas Company for Approval)
to Construct a New Underground)
Natural Gas Pipeline in the Cities of)
Cambridge and Somerville, Massachusetts.)

EFSB 00-2

FINAL DECISION

Denise L. Desautels
Hearing Officer
December 14, 2001

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LIST OF ABBREVIATIONS

Algonquin	Algonquin Gas Transmission Company
<u>ANP Bellingham Decision</u>	<u>ANP Bellingham Energy Company</u> , 7 DOMSB 39 (1998)
August 2000 forecast	updated projections of forecast gas supply and demand, prepared in August 2000 for the period 2000 to 2005
BBtu/yr	billion British thermal units per year
<u>1997 BECo Decision</u>	<u>Boston Edison Company - Hopkinton and Milford</u> , 6 DOMSB 208 (1997)
<u>1999 Berkshire Gas Decision</u>	<u>Berkshire Gas Company</u> , 9 DOMSB 1 (1999)
c.	Chapter
<u>1998 Cabot Power Decision</u>	<u>Cabot Power Corporation</u> , 7 DOMSB 233 (1998)
<u>CELCo Decision</u>	<u>Cambridge Electric Light Company</u> , 12 DOMSB 305 (2001)
CSX	CSX Corporation
Company	NSTAR Gas Company
dBa	decibels, A-weighted
dbh	diameter at breast height
Department	Massachusetts Department of Telecommunications and Energy
Distrigas	Distrigas of Massachusetts Corporation
dt	decatherms
dt/day	decatherms per day
dt/hr	decatherms per hour
EUT	end user transportation
°F	degrees Fahrenheit
f/k/a	formerly known as
1996 Forecast and Supply Plan	<u>Commonwealth Gas Company Long-Range Forecast and Resource Plan</u> , 1996-2001, D.T.E./D.P.U. 96-117 (2000)
G.L.	Massachusetts General Laws
HRSG	heat recovery steam generator

Kendall Station Project	Repowering of Kendall Station generating facility, Cambridge
LNG	liquified natural gas
MADEP	Massachusetts Department of Environmental Protection
MAOP	maximum allowable operating pressure
MBTA	Massachusetts Bay Transportation Authority
mcf	thousand [standard] cubic feet [of gas]
mcfh	thousand [standard] cubic feet [of gas] per hour
MCP	Massachusetts Contingency Plan, 310 CMR, § 40.0000 <u>et seq.</u>
MDC	Metropolitan District Commission
<u>MECo/NEPCo Decision</u>	<u>Massachusetts Electric Company and New England Power Company</u> , 18 DOMSC 383 (1989)
MHC	Massachusetts Historical Commission
Mirant Kendall	Mirant Kendall, LLC
MIT	Massachusetts Institute of Technology
mmBtu	million British thermal units
mmBtu/hr	million British thermal units per hour
<u>MMWEC Decision</u>	<u>Massachusetts Municipal Wholesale Electric Company</u> , 12 DOMSB 18 (2001)
<u>1998 NEPCo Decision</u>	<u>New England Power Company</u> , 7 DOMSB 333 (1998)
NPDES	National Pollution Discharge Elimination System
NSTAR Gas	NSTAR Gas Company
OHM	oil and hazardous materials
OSHA	U.S. Occupational Safety and Health Administration
psig	pounds per square inch, gauge
<u>SE Kendall Decision</u>	<u>Southern Energy Kendall, LLC</u> , 11 DOMSB 255 (2000)
Siting Board	Massachusetts Energy Facilities Siting Board
Third Street Gate Station	NSTAR Gas gate station at Third Street in Cambridge

USEPA

U.S. Environmental Protection Agency

The Energy Facilities Siting Board hereby APPROVES, subject to two conditions, the petition of NSTAR Gas Company to construct approximately 2.2 miles of 18-inch diameter high-pressure natural gas pipeline from an interconnection with Algonquin Gas Transmission Company in Somerville to NSTAR Gas Company's existing Third Street Gate Station in Cambridge.

I. INTRODUCTION

A. Summary of the Proposed Project

NSTAR Gas Company, f/k/a Commonwealth Gas Company, ("NSTAR Gas" or the "Company") distributes and sells natural gas to local customers in eastern and central Massachusetts (Exhs. NGC-3, at 1-1, 1-2; EFSB-G-1; Tr. 1, at 14). The Company proposes to build a 2.2-mile, 18-inch diameter pipeline ("proposed project" or "proposed pipeline") in Cambridge and Somerville to accommodate an anticipated equipment upgrade project at Kendall Station, a generating facility in Cambridge ("Kendall Station Project") (Exh. NGC-3, at 1-1, 1-2, 3-1).^{1, 2}

The proposed pipeline would begin at a point in Somerville at which the existing J-2 lateral pipeline changes ownership from the Algonquin Gas Transmission Company ("Algonquin") to NSTAR Gas and terminate at the existing NSTAR Gas gate station at Third Street in Cambridge ("Third Street Gate Station") (Exh. NGC-3, at 1-1, 3-1, 3-2; Tr. 2, at 259-261). The proposed pipeline would be certified to operate at a pressure of 433 pounds per square inch, gauge ("psig"), consistent with the upstream Algonquin transmission system, and would replace a section of an existing 14-inch pipeline which is certified for a pressure of 329 psig³ (Exh. NGC-3, at 1-1).

¹ NSTAR Gas stated that to provide the higher pressure requested by the Kendall Station Project, it also would install a new 1000-foot service line from the Third Street Gate Station to Kendall Station (Exh. NGC-3, at 1-1 n.1, 1-10). NSTAR Gas stated that the installation of the service line is independent of the proposed project (id. at 1-10).

² The Kendall Station Project was approved by the Siting Board on December 15, 2000. Southern Energy Kendall, LLC, 11 DOMSB 255 (2000) ("SE Kendall Decision").

³ NSTAR Gas stated that once the proposed pipeline is operational, the existing 14-inch pipeline, (continued...)

NSTAR Gas' preferred route for the pipeline begins at the existing J-22 valve on the J-2 lateral, where ownership changes from Algonquin to NSTAR Gas (id. at 3-1). The J-22 valve is located on the McGrath Highway in Somerville, near its intersection with Medford Street and Highland Avenue (id. at 1-5, 1-11, 5-14). From this intersection, the preferred route follows Medford Street south, and continues past Somerville Avenue, crossing under Massachusetts Bay Transportation Authority ("MBTA") railroad tracks to the Somerville/Cambridge municipal boundary (id. at 1-11, 5-14). Continuing southeast on Gore Street in Cambridge, the preferred route crosses a CSX Corporation ("CSX") railroad track crossing, turns northeast on Rufo Road, eastward through the parking lot of Twin City Mall, and southeast along the Monsignor O'Brien Highway, passing under the MBTA Green Line viaduct at the intersection with Cambridge Street (id. at fig. 1.2-1). The route makes a sharp turn west onto Cambridge Street for a very short distance, then proceeds south on First Street, west on Linskey Way (also referred to as Munroe Street), and south on Third Street to the Third Street Gate Station (id. at 1-5, 1-11).

A variation to the preferred route, for which the Company requests approval should obstacles prevent construction at the Cambridge Street/O'Brien Highway intersection, turns off the O'Brien Highway at its intersection with Gore Street and Second Street, follows Second Street south to Cambridge Street and then Cambridge Street east to First Street, where the variation rejoins the preferred route (id.).

The Company also noticed an alternate route which follows the same path as the preferred route until the intersection of Gore Street and Rufo Road in Cambridge (id. at fig. 1.2-1). At that point, the alternate route continues east on Gore Street, south on Fifth Street, east on Binney Street, and south on Third Street to the Third Street Gate Station (id. at 1-5, 1-14). The preferred and alternate routes are shown in Figure 1 (attached).

³

(...continued)

which runs from the Algonquin pipeline to the Third Street Gate Station, would be operated at 60 psig as part of the Company's distribution system, providing additional capacity and reliability to customers in Cambridge and Somerville (Exh. NGC-3, at 3-1 to 3-2).

B. Procedural History

On October 10, 2000, NSTAR Gas filed with the Energy Facilities Siting Board (“Siting Board”) its original petition to construct and operate a 16-inch high pressure natural gas pipeline from the J-22 valve to the Third Street Gate Station (Exh. NGC-1). The Siting Board docketed the petition as EFSB 00-2. On February 28, 2001, NSTAR Gas filed an amended petition to reflect the elimination of a proposed variation to its preferred route (Exh. NGC-2). On June 25, 2001, NSTAR Gas filed a second amended petition to reflect an increase in the diameter of the pipeline from 16 to 18 inches (Exh. NGC-3, at 1-1).⁴

In accordance with the direction of the Hearing Officer, NSTAR Gas provided Notice of Public Hearing and Adjudication. The Siting Board conducted two public hearings regarding the proposed project. The first public hearing was conducted on January 4, 2001, in Cambridge. Because some abutters to the proposed routes and route segments who were required to receive notice of the hearing did not receive such notice, and because NSTAR Gas no longer intended to offer for approval a previously noticed variation to the proposed preferred route, a second public hearing was noticed for March 5, 2001. Due to inclement weather, the March 5, 2001 hearing was postponed and subsequently was conducted on March 22, 2001, in Cambridge.

Timely petitions to intervene in this proceeding were filed by the City of Cambridge and Mirant Kendall, LLC.⁵ Timely petitions to participate as interested persons were filed by the Massachusetts Institute of Technology (“MIT”), Mary Ann Donofrio, and Kendall Square, LLC. The Hearing Officer granted intervenor status and interested person status to each petitioner seeking such status. NSTAR Gas Company, EFSB 00-2 (Hearing Officer Ruling, April 13, 2001; Hearing Officer Ruling, April 18, 2001).

Adjudicatory hearings in this proceeding commenced on June 28, 2001, and closed on July 6,

⁴ NSTAR Gas stated that it amended its petition in response to a request by Mirant Kendall, LLC to increase peak delivery capability to Kendall Station (Exh. NGC-3, at 1-1).

⁵ On April 13, 2001, intervenor Southern Energy Kendall, LLC informed the Siting Board that it would now be known as Mirant Kendall, LLC (“Mirant Kendall”) (Letter of JoAnne A. Pierce, Frank P. Pozniak, Counsel for Mirant Kendall, LLC, dated April 13, 2001).

2001. NSTAR Gas presented the testimony of the following witnesses: Robert J. Buffone, Jr., Principal Engineer, NSTAR Gas, who testified as to project description, project need, project approaches, route selection process, and cost of the proposed project; Joseph W. Freeman, Program Director, Earth Tech, who testified as to environmental impacts and comparison of proposed facilities along the preferred and alternative routes; Barbara W. Stamos, Senior Gas Supply Planning Administrator, NSTAR Gas, who testified as to gas forecasting and supply; and David L. Ward, Manager of Gas Control, NSTAR Gas, who testified as to gas supply issues (Exhs. NGC-RBC-1; NGC-JWF-1; NGC-BWS-1; NGC-DLW-1). In addition to testimony from witnesses who submitted prefiled direct testimony, NSTAR Gas offered Robert Connors, Lead Engineer, Asset Management Transmission/Right-of-Way Department, NSTAR Gas, who testified as to property issues (Tr. 1, at 34). No intervenor presented a direct case.

The Hearing Officer entered 233 exhibits, consisting primarily of information request responses and record request responses, into the evidentiary record. On August 20, 2001, NSTAR Gas and the City of Cambridge submitted their respective initial briefs. On August 27, 2001, NSTAR Gas and the City of Cambridge filed their respective reply briefs.

C. Jurisdiction and Scope of Review

NSTAR Gas filed its petition to construct a natural gas pipeline in accordance with G.L. c. 164, § 69H, which requires the Siting Board to implement the energy policies in its statute to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, and pursuant to G.L. c. 164, § 69J, which requires a project applicant to obtain Siting Board approval for the construction of proposed energy facilities before a construction permit may be issued by another state agency.

As a new pipeline over one mile in length intended for the transmission of natural gas, NSTAR Gas' proposed project falls within the definition of "facility" set forth in G.L. c. 164, § 69G, which provides that a "facility" includes:

a new pipeline for the transmission of gas having a normal operating pressure in excess of 100 pounds per square inch gauge which is greater than one mile in length except restructuring,

rebuilding, or relaying of existing transmission lines of the same capacity.

G.L. c. 164, § 69G.

Before approving a petition to construct facilities, the Siting Board requires an applicant to justify its proposal in three phases. G.L. c 164, § 69J. First, the Siting Board requires the applicant to show that additional energy resources are needed (see Section II.A, below). Next, the Siting Board requires the applicant to establish that, on balance, its proposed project is superior to alternative approaches in terms of cost, environmental impact, reliability, and ability to address the identified need (see Section II.B, below). Finally, the Siting Board requires the applicant to show that it has considered a reasonable range of practical facility siting alternatives and that the proposed site for the facility is superior to a noticed alternative site in terms of cost, environmental impact, and reliability of supply (see Section III, below).

II. ANALYSIS OF THE PROPOSED PROJECT

A. Need Analysis

1. Standard of Review

In accordance with G.L. c. 164, § 69H, the Siting Board is charged with the responsibility for implementing energy policies in its statute to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L.

c. 164, § 69H. In carrying out this statutory mandate with respect to proposals to construct natural gas pipelines, the Siting Board evaluates whether there is a need for additional natural gas pipelines in the Commonwealth to meet reliability, economic efficiency, or environmental objectives. See Massachusetts Municipal Wholesale Electric Company, 12 DOMSB 18, at 43 (2001) (“MMWEC Decision”); Berkshire Gas Company, 9 DOMSB 1, at 12 (1999) (“1999 Berkshire Gas Decision”); Massachusetts Electric Company and New England Power Company, 18 DOMSC 383, at 393 (1989) (“MECo/NEPCo Decision”).

In evaluating the need for new energy facilities to meet reliability objectives, the Siting Board

may evaluate the ability of its existing system to accommodate changes in aggregate demand or supply,⁶ to serve major new loads, or to maintain reliable service in certain contingencies. The Siting Board previously has approved proposals to construct gas pipelines to accommodate load growth within a utility's service territory (Boston Gas Company, 17 DOMSC 155 (1988)) and to transport natural gas to generating facilities (MMWEC Decision, 12 DOMSB 18; Berkshire Gas Company, 20 DOMSC 109 (Phase II) (1990); Bay State Gas Company, 21 DOMSC 1 (1990)). In such cases, the proponent must demonstrate that additional energy resources are necessary to meet reliability objectives by establishing that its existing system is inadequate to serve the anticipated load with acceptable reliability.

2. Description of the Existing System

NSTAR Gas stated that it receives natural gas via two interstate transportation systems, one operated by Algonquin and one by the Tennessee Gas Pipeline Company (Exh. NGC-3, at 2-2). The Company also is supplied with liquified natural gas ("LNG") delivered to Distrigas of Massachusetts Corporation ("Distrigas") and injected at Everett into the Algonquin system (id. at 2-2, 2-3). The Company's Cambridge/Somerville distribution system is served by two Algonquin gate stations -- the Brookford Street Gate Station and the Third Street Gate Station (Exh. EFSB-G-4; Tr. 2, at 257). The Third Street Gate Station is served by the J-2 lateral, a 14-inch pipeline owned in part by Algonquin and in part by NSTAR Gas, which connects the gate station with Algonquin's Mystic Avenue regulator in Medford (Exhs. NGC-3, at 2-5, 2-7; EFSB-G-4).^{7, 8} The Company indicated that the maximum

⁶ With respect to changes in demand or supply, the Siting Board has found that new capacity is needed where projected future capacity available to the system is found to be inadequate to satisfy projected load and reserve requirements. ANP Blackstone Energy Company, 8 DOMSC 1, at 27 (1999); Cabot Power Corporation, 7 DOMSB 233, at 249 (1998) ("1998 Cabot Power Decision"); New England Electric System, 2 DOMSC 1, at 9 (1977).

⁷ Algonquin owns the upstream section of the J-2 lateral, consisting of 10,700 feet of 14-inch pipeline between the Mystic Avenue regulator and the J-22 valve (Exhs. NGC-3, at 3-1; EFSB-G-4). NSTAR Gas owns the 9400 foot section of the J-2 lateral which lies between the J-22 valve and the Third Street Gate Station (Exhs. NGC-3, at 3-1; EFSB-G-4). NSTAR

(continued...)

allowable operating pressure (“MAOP”) on the Algonquin system upstream of the Mystic Avenue regulator is 433 psig (Exh. NGC-3, at 2-7). The Algonquin-owned section of the J-2 lateral also has an MAOP of 433 psig, but operates at no more than 329 psig because the NSTAR Gas section of the J-2 lateral has an MAOP of 329 psig (id. at 2-5, 2-7).

The Third Street Gate Station routes gas to distribution mains serving Kendall Station, MIT, the Blackstone Electric Station, and other local NSTAR Gas customers (id. at 2-5; Exh. EFSB-G-4). The Company stated that Kendall Station currently receives interruptible gas transportation service via an 8-inch, 90 psig service line from the Third Street Gate Station (Exhs. NGC-3, at 2-5; EFSB-N-8; Tr. 2, at 269). The Company stated that it delivers gas from the Third Street Gate Station to MIT through a 12-inch, 325 psig line and indicated that it is contractually obligated to provide gas service to MIT at 325 psig (Exh. NGC-3, at 2-5, 2-7). The Company distributes gas to other customers via a second 90 psig line, and additional lines operating at 60 psig, 10 psig, and less than 1 psig (id. at 2-5; Exh. EFSB-G-4). NSTAR Gas stated that sendout from the Third Street Gate Station averaged 24,482 decatherms per day (“dt/day”) in year 2000 and typically runs at 2000 decatherms per hour (“dt/hr”) (Exhs. EFSB-N-13-1; EFSB-N-14-S).⁹ The Company also noted that its peak recorded sendout levels were 2449 dt/hr (on January 18, 2000), and 51,861 dt/day (Exhs. EFSB-N-13-1; EFSB-N-14-S; Tr. 2, at 283). The Company stated that Kendall Station was not drawing gas at the time of peak hourly sendout from the Third Street Gate Station (Tr. 2, at 283; Tr. 3, at 293).

3. Need for Additional Pipeline Capacity

a. Description

⁷ (...continued)

Gas indicated that it owns and operates the pressure regulating equipment at Algonquin’s Mystic Avenue regulator (Exhs. NGC-3, at 3-2; EFSB-G-4; Tr. 3, at 339).

⁸ The Company stated that Algonquin also has an emergency interconnect off the NSTAR Gas portion of the J-2 lateral, which is used less than once a year to provide Boston Gas Company with gas for its 22 psig distribution system (Exhs. NGC-3, at 2-7; EFSB-G-6; Tr. 1, at 22).

⁹ One decatherm (1 dt) equals one million British thermal units (1 mmBtu). Gas with a volume at standard temperature and pressure of one thousand cubic feet of gas (1 mcf) typically has a heat content of about 1 mmBtu, depending on the gas mixture (Tr. 2, at 262-265).

NSTAR Gas asserted that it is not able both to provide expanded service to Kendall Station and to serve existing customers in Somerville and Cambridge with its existing facilities (Exh. NGC-3, at 2-2). To document the requirements of its Somerville and Cambridge customers, NSTAR Gas provided a copy of its most recent approved forecast, developed in 1996 and entitled “Long-Range Forecast and Resource Plan, 1996-2001” (“1996 Forecast and Supply Plan”) (Exh. EFSB-N-1(a) Att.). See Commonwealth Gas Company Long-Range Forecast and Resource Plan, D.T.E./D.P.U. 96-117 (2000). The Company indicated that it had not anticipated the Kendall Station Project when the 1996 Forecast and Supply Plan was developed (Exh. EFSB-N-1). In its 1996 Forecast and Supply Plan, the Company projected that annual aggregate sales in its Cambridge division would grow from 7451 billion Btu per year (“BBtu/yr”) in 1996 to 7865 BBtu/yr in 2001 and concluded that it had adequate resources to serve firm sendout customers in the years 1996 to 2001 (Exh. EFSB-N-1(a) Bulk Att. at 3, 4, 57).¹⁰ During this proceeding, the Company stated that sendout in the area of Third Street in Cambridge has increased significantly due to new construction and industrial growth, indicated that the reliability of the existing distribution system in Somerville and Cambridge could benefit from improvement, and stated that the system is currently constrained from accepting new load in a section of Somerville near the existing 14-inch NSTAR Gas pipeline (Exh. EFSB-N-7).

NSTAR Gas stated that Mirant Kendall has requested gas delivery at a rate of 2300 million Btu per hour (“mmBtu/hr”) and a pressure of 430 psig (Exh. NGC-3, at 1-2, 2-2).¹¹ The Company noted that this rate represents 94% of the historic maximum flow through the Third Street Gate Station (Exh. EFSB-N-13-1-S). The Company indicated that it could not deliver gas at 430 psig to Kendall Station with its existing facilities, since the J-2 lateral currently is limited to 325 or 329 psig (Exhs. NGC-3, at

¹⁰ NSTAR Gas stated that it evaluates system adequacy for system load conditions at an ambient temperature of -20°F (degrees Fahrenheit) (Exh. NGC-3, at 2-7).

¹¹ The Company provided an April 2001 letter from Mirant Kendall requesting transportation for 2312.5 mmBtu/hr of gas (Exh. RR-EFSB-3 Att.). Subsequently, the Company stated that the maximum connected load at Kendall Station would be 2300 dt/hr (Exh. EFSB-N-5-S). NSTAR Gas indicated that the combustion turbine to be used at Kendall Station has a maximum design flow rate of 1965 dt/hr, while the Heat Recovery Steam Generator (“HRSG”) can consume an additional 335 dt/hr (Exh. NGC-3, at 1-2). The Company anticipates that Mirant Kendall would contract for 1965 mmBtu/hr of firm gas transportation and 335 mmBtu/hr of interruptible transportation (Tr. 2, at 269).

1-1, 2-2; EFSB-N-11-S).

The Company stated that it has a contractual obligation to provide gas service to MIT at 325 psig but that it is unable to maintain this pressure during periods of peak demand (Exhs. NGC-3, at 2-5, 2-7; EFSB-N-9-S Att.; Tr. 3, at 305). However, the Company indicated that it has generally been able, even during periods of peak demand, to maintain a pressure of at least 300 psig at the Third Street Gate Station and at MIT, 300 psig being the minimum pressure needed to maintain the operation of MIT's compressor (Exhs. NGC-3, at 2-7, 3-5; EFSB-N-11; Tr. 3, at 298, 305-306). The Company stated that under the constraint of maintaining a pressure of 300 psig at MIT, the existing J-2 lateral can accommodate approximately 3000 thousand cubic feet of gas per hour ("mcfh") to the Third Street Gate Station (Exh. EFSB-N-11-S).

In support of its contention that it cannot reliably serve both the repowered Kendall Station and its current customers with existing equipment, NSTAR Gas provided a summary of the results of a system analysis (Exh. EFSB-N-9-S Att.). The Company reported results of four analyses based on different scenarios with respect to upstream pressure, assuming increased gas delivery to Kendall Station via a new service line from the Third Street Gate Station to Kendall Station, without any enhancement of the infrastructure serving the Third Street Gate Station (*id.*). The four scenarios assume that 213 mcfh would flow to MIT, that 2000 or 2500 mcfh would flow to the repowered Kendall Station, and that an assumed peak-hour flow of 2499 or 2585 mcfh would flow to other customers (*id.*). The four scenarios variously assume external pressures at the Mystic Avenue regulator of 326.6 psig, 329 psig, 370 psig, and 433 psig (*id.*). Delivery pressures at Kendall Station would range, under the four scenarios, from 209 psig to 350 psig, with pressures at MIT running about 3 psig higher than those at Kendall Station (*id.*). The Company interpreted its results as indicating that adding delivery of 2300 dt/hr of gas to Kendall Station to historic peak sendout volumes to other customers would result in delivery pressures of 209 psig at Kendall Station and 212 psig at MIT (Exhs. NGC-3, at 2-7; EFSB-N-15-S).¹² The Company noted that these pressures would be well below the delivery pressure of 430 psig identified as necessary for the repowered Kendall Station, and also below the

¹² The summary of the system modeling indicates that a pressure of 236.6 psig could be maintained at MIT with firm transportation of approximately 2000 mcfh of gas to Kendall Station (Exh. EFSB-N-9-S Att.).

delivery pressure of 325 psig required by contract with MIT (Exhs. NGC-3, at 2-7, 3-4; EFSB-N-11; EFSB-N-11-S). The Company's modeling further demonstrated that the inlet pressure at the Third Street Gate Station would be below 300 psig, the minimum pressure the Company believes is required to safely operate the distribution system and maintain reliable gas service to MIT (Exh. EFSB-PA-7).¹³

b. Analysis

In order to meet its statutory mandate, the Siting Board first evaluates whether there is a need for additional energy resources to meet reliability, economic efficiency, or environmental objectives. The Siting Board must find that additional energy resources are needed as a prerequisite to approving a proposed energy facility. MMWEC Decision, 12 DOMSB at 56; 1999 Berkshire Gas Decision, 9 DOMSB at 12; MECo/NEPCo Decision, 18 DOMSC at 396-403.

Here, NSTAR Gas has proposed to increase system capacity by constructing a natural gas pipeline to an existing take station in order to transport additional gas to a repowered Kendall Station, while providing reliable service to its other local customers. The record shows that NSTAR Gas delivers gas to numerous Cambridge-area customers, including Kendall Station and MIT, via the Third Street Gate Station. The Company has modeled peak hour gas flow and delivery pressures at the repowered Kendall Station and at MIT, assuming that no additional capacity is added to the NSTAR Gas delivery system. The Company's modeling demonstrates that, without changes to the existing supply system, deliveries of 2300 mmBtu/hr to the repowered Kendall Station on a peak day would cause delivery pressures at MIT to drop to 212 psig; if deliveries to the repowered Kendall Station were limited to 2000 mmBtu/hr, peak day delivery pressures at MIT still would drop to approximately 237 psig, well below the minimum pressure needed to keep MIT's equipment on-line. The record thus indicates that the J-2 lateral is not currently capable of supplying the repowered Kendall Station with the requested volumes of gas while maintaining adequate pressure for existing customers served by the

¹³ The Company stated that the J-2 lateral can transport approximately 3000 mcfh of gas and still maintain a pressure of 300 psig at the Third Street Gate Station, assuming an inlet pressure of 325 psig at the Mystic Avenue regulator (Exh. EFSB-N-11-S).

Third Street Gate Station.¹⁴

The record also demonstrates that, without changes to the existing supply system, the Company could not deliver the requested volumes to the repowered Kendall Station at the requested pressure of 430 psig, and that delivery pressures could be as low as 209 psig under certain scenarios. While a delivery pressure of 430 psig to the repowered Kendall Station may be desirable, the record indicates that it is not necessary because gas delivered to Kendall Station can be recompressed on-site for use in the Kendall Station turbine. Nonetheless, the low potential delivery pressures to Kendall Station provide additional evidence that system reinforcements are desirable.

Based on the modeled delivery pressures at MIT and at Kendall Station, the Company has established that its existing system is inadequate to serve its anticipated load in the Third Street Gate Station area with acceptable reliability. Consequently, the Siting Board finds that there is a need for additional energy resources in the area of the Third Street Gate Station in Cambridge.

4. Consistency with Long-Range Forecast

G.L. c. 164, § 69J requires that a facility proposed by a gas company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long-range forecast. G.L. c. 164, § 69J. NSTAR Gas is a gas company required to file a long-range forecast pursuant to G.L. c. 164, § 69I. See G.L. c. 164, §§ 75B, 75H. Consequently, to satisfy the statutory requirement, the Siting Board reviews the consistency of the proposed gas pipeline with the most recent long-range forecast submitted by NSTAR Gas.

The Company stated that its most recent forecast filed pursuant to G.L. c. 164, § 69I -- the 1996 Forecast and Supply Plan -- was approved by the Department of Telecommunications and Energy ("Department") in January 2000 (Exh. EFSB-N-1). See Commonwealth Gas Company, Long-Range Forecast and Resource Plan, D.T.E/D.P.U. 96-117 (2000). The Company asserted that

¹⁴ The Company also has suggested that its low pressure system in Somerville and Cambridge may be unreliable, and that the proposed project would allow it to provide local distribution of gas in an area of Somerville along the existing 14-inch line. These arguments have not been sufficiently developed in this proceeding to support a finding of need for additional energy resources.

it continues to use the methods and process detailed in its Department-approved forecast to prepare updated forecasts and support plans for system development such as the proposed project (NSTAR Gas Initial Brief at 8, citing Tr. 2, at 275).

In support of its contention that the proposed project is consistent with an approved forecast, the Company provided a copy of the 1996 Forecast and Supply Plan, including load projections for the period 1996 to 2001, together with a copy of updated projections prepared in August 2000 for the period 2000 to 2005 ("August 2000 Forecast") (Exhs. EFSB-N-1(a); EFSB-N-1(b); EFSB-N-1-S). The Company explained that its methods for developing load projections in the approved and updated forecasts included use of econometric models to develop multi-variable regression equations, which in turn were used to generate firm and aggregate sales projections (Tr. 2, at 275). The Company stated that it included different load growth scenarios -- high, medium, and low -- as part of the 1996 Forecast and Supply Plan, and that actual growth has been close to the medium-growth scenario (Tr. 3, at 346-348). The Company also noted that, consistent with industry trends toward unbundling of gas supply and transportation, use of its system for end user transportation ("EUT") requirements has been increasing, including conversion of existing customers from firm sales to EUT service; the Company's forecasts track and project EUT as a component of system throughput, distinct from Company sales and sendout (Exhs. EFSB-N-1; EFSB-N-1(a) at 2-3, 62-95; EFSB-N-1(b); EFSB-N-1-S).¹⁵

The Company indicated that system improvements such as the proposed project typically are not addressed as part of a long-range forecast (Tr. 2, at 276-277). However, the Company stated that it used projections from the August 2000 Forecast as a basis for the system analysis used to establish the need for the proposed project and to compare alternative project approaches, and noted that these projections are consistent with the medium-growth scenario presented in the 1996 Forecast and Supply Plan (Exhs. EFSB-N-1; EFSB-N-9; Tr. 3, at 346-348).¹⁶

¹⁵ In the August 2000 Forecast, the Company projected that Cambridge district total throughput, excluding MIT and new Kendall Station load, will increase 13.3% from 9733 BBtu/yr in 2001 to 11,032 BBtu/yr in 2005 (Exh. EFSB-N-1-S).

¹⁶ In its system analysis for the proposed project, the Company evaluated existing and alternative future system configurations based on modeling of system flow rates and pressures for 2001
(continued...)

G.L. c. 164, § 69J requires that a facility proposed by a gas company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long-range forecast. G.L. c. 164, § 69J. In prior cases where the need for a facility has been premised on an electric or gas company's need to serve load in a localized area, the Siting Board has found the facility to be consistent with a previously approved forecast either if the need for the facility was established in that forecast, or if the localized forecast upon which a showing of need was based was methodologically consistent with that forecast. See Cambridge Electric Light Company, 12 DOMSB 305, at 320 (2001) ("CELCo Decision"); New England Power Company, 7 DOMSB 339, at 357 (1998) ("1998 NEPCo Decision"); Norwood Municipal Light Department, 5 DOMSB 109, at 127 (1997).

Another class of projects, not clearly anticipated by statute, are those projects designed to serve a specific customer or set of customers, rather than to serve load in a specific section of a company's service territory. While the need for such projects generally is unrelated to the issues typically addressed in a long-range forecast, the choice of project approach may affect, either positively or negatively, a company's ability to reliably meet load requirements in the remainder of its service territory.

The Siting Board acknowledges that electric and gas companies may receive requests to serve major new loads, including new generation, at any time during the forecast cycle, and that companies should respond to such requests in a timely fashion, using the best information available at the time of the request. Therefore, when considering a proposed facility designed to serve new generation, the Siting Board will consider the facility to be consistent with a long-range forecast if any issues related to the project's effect on the company's ability to serve load in its service territory are addressed using a forecast that is methodologically consistent with its most recently approved forecast. See CELCo Decision, 12 DOMSB at 320.

Here, the Company has performed a system analysis in order to assess the need for additional

¹⁶

(...continued)

and 2005; the Company's analysis assumed that peak deliveries to customers other than Kendall Station and MIT would increase by up to 13%, from a year 2001 flow rate of between 2485 and 2585 mcfh to a year 2005 flow rate of between 2794 and 2814 mcfh (Exhs. EFSB-N-9-S; EFSB-N-9-S Att.; EFSB-N-13-2; Tr. 3, at 314).

energy resources to meet Mirant Kendall's request for an enhanced gas supply to its repowered Kendall Station, using load data and projections from internal Company forecasts. The Company also used the system analysis to evaluate various approaches to providing this enhanced gas supply, in light of their effect on the Company's ability to reliably serve its customers in Somerville and Cambridge (see Section II.B, below).

With respect to forecast consistency, the Company has provided information about: the methods and results of its most recently approved long-range forecast; the 1996 Forecast and Supply Plan; its analysis to internally update its long-range forecast in August 2000; and its use of the updated long-range forecast to derive load assumptions for its system analysis. The Company has established that its current internal forecasts for its Cambridge district are methodologically consistent with its most recently approved long-range forecast. The Company has further established that the load assumptions in its system analysis for the proposed project are consistent with its current internal forecasts for the Cambridge district. Accordingly, the Siting Board finds that the proposed project is consistent with the Company's most recently approved long-range forecast.

B. Comparison of Proposed Project and Alternative Approaches

1. Standard of Review

G.L. c. 164, § 69H requires the Siting Board to evaluate proposed projects in terms of their consistency with providing a reliable energy supply to the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, § 69H. In addition, G.L. c. 164, § 69J requires a project proponent to present "alternatives to planned action" which may include: (a) other methods of generating, manufacturing, or storing electricity or natural gas; (b) other sources of electrical power or natural gas; and (c) no additional electric power or natural gas.¹⁷ G.L. c. 164, § 69J.

In implementing its statutory mandate, the Siting Board requires an applicant to show that, on balance, its proposed project is superior to alternate approaches in terms of cost, environmental impact, and ability to meet the identified need. CELCo Decision, 12 DOMSB at 321; Boston Edison

¹⁷ G.L. c. 164, § 69J, also requires an applicant to provide a description of "other site locations." G.L. c. 164, § 69J. The Siting Board reviews the applicant's preferred route, as well as other possible routes, in Section III.B, below.

Company - Hopkinton and Milford, 6 DOMSB 208, at 252 (1997) (“1997 BECo Decision”); Boston Edison Company, 13 DOMSC 63, at 67-68, 73-74 (1985). In addition, the Siting Board requires a petitioner to consider reliability of supply as part of its showing that the proposed project is superior to alternative project approaches. CELCo Decision, 12 DOMSB at 321; 1997 BECo Decision, 6 DOMSB at 253-257; MECo/NEPCo Decision, 18 DOMSC at 404-405.

2. Identification of Project Approaches for Analysis

The Company presented four project approaches for analysis: (1) installation of a new 18-inch line on the NSTAR Gas portion of the J-2 lateral (“proposed project”); (2) upgrade of the existing NSTAR portion of the J-2 lateral to a rating of 433 psig (“Alternative Approach 1”); (3) installation of a new dedicated pipeline from the Mystic Avenue regulator in Medford directly to Kendall Station (“Alternative Approach 2”); and (4) replacement of the entire J-2 lateral (both Algonquin and NSTAR Gas portions) from the Mystic Avenue regulator to the Third Street Gate Station (“Alternative Approach 3”) (Exh. NGC-3, at 3-1 to 3-4).¹⁸ The Company indicated that it did not consider the use of compression at the Third Street Gate Station as a possible means to meet the identified need (Exh. EFSB-PA-7).

a. The Proposed Project Approach

NSTAR Gas proposes to construct an approximately 11,775-foot, 18-inch pipeline rated for 433 psig from the J-22 valve in Somerville to the Third Street Gate Station (Exh. NGC-3, at 3-1). This pipeline would operationally replace the existing 14-inch NSTAR Gas portion of the J-2 lateral (id. at 1-1, 4-2). The existing 14-inch pipeline would be retained for use as part of the 60 psig distribution system for Cambridge and Somerville (id. at 3-1, 3-2). In addition, as part of the proposed project,

¹⁸ These four approaches were highlighted by the Company in its comparison of project approaches; these are not necessarily the only approaches considered by the Company. For instance, the Company considered constructing a pipeline from the Brookford take station in western Cambridge, but determined that such a pipeline would pass through highly congested areas in Cambridge without providing additional benefits; consequently, this approach was not considered further (Exh. EFSB-PA-4).

gas-fired gas heaters would be installed at the Third Street Gate Station,¹⁹ and the pressure regulators at Algonquin's Mystic Avenue regulator would be removed (id. at 3-1; Exhs. NGC-2, at 1-10; EFSB-E-29). The Company stated that hydrostatic testing of the new pipe would not be required (Exh. NGC-3, at 3-3).

NSTAR Gas indicated that the proposed project would provide gas to Kendall Station at 304 psig, rather than the requested pressure of 430 psig, so additional compression by the customer would be required at Kendall Station (id. at 3-4; Tr. 2, at 264).²⁰

b. Alternative Approach 1

Alternative Approach 1 would involve upgrading and certifying the existing 14-inch NSTAR Gas segment of the J-2 lateral to 433 psig, to match the certification of the Algonquin segment of the J-2 lateral (id. at 3-2). NSTAR Gas indicated that Alternative Approach 1 would require major rehabilitation of the existing 14-inch pipeline, including replacement of 2662 feet of pipe that has a wall thickness that the Company considers inadequate for the higher pressure (id. at 3-3).

Certification would also require a hydrostatic test of the line (id. at 3-2). To maintain continuity of service to customers during pipeline rehabilitation and hydrostatic testing, estimated to last six to eight weeks, NSTAR Gas would temporarily store and vaporize LNG at the Third Street Gate Station as a substitute source of gas (id. at 3-2, 3-3). NSTAR Gas stated that under Alternative Approach 1, it would remove the pressure regulators at Algonquin's Mystic Avenue regulator following certification of

¹⁹ Heating the gas is required to protect equipment from freezing downstream of pressure reducing valves at the Third Street Gate Station (Exh. NGC-3, at 1-10).

²⁰ The Company provided results of its calculations of the pressure that a pipeline from the J-22 valve to the Third Street Gate Station could deliver, assuming three different pipe diameters (Exh. EFSB-PA-5-S). For these calculations, the Company assumed an inlet pressure of 370 psig at the Mystic Avenue regulator, a repowered Kendall Station, and peak demand (id.). The calculations indicated that a 14-inch diameter pipe could deliver a minimum of 200 psig, a 16-inch pipe could deliver a minimum of 292 psig, and an 18-inch pipe could deliver a minimum of 307 psig; the diameter of 18 inches was selected in order to maintain a delivery pressure of at least 300 psig (id.).

the NSTAR Gas section of the J-2 lateral (id.). The Company indicated that under Alternative Approach 1, gas pressure at MIT could drop as low as 271 psig during peak system sendout; the Company therefore asserted that use of Alternative Approach 1 would compromise MIT's supply situation (Exh. EFSB-N-9-S; Tr. 3, at 322).²¹

c. Alternative Approach 2

Alternative Approach 2 would involve construction of approximately 21,000 feet of 12-inch pipeline from the Mystic Avenue regulator in Medford directly to Kendall Station (Exh. NGC-3, at 3-3).²² The J-2 lateral would continue to move gas to the Third Street Gate Station for the other existing NSTAR Gas customers (Tr. 3, at 332). The Company stated that it would need to obtain additional land area at the existing Mystic Avenue regulator in Medford in order to tie the new pipeline into the Algonquin transportation system (Exh. NGC-3, at 3-3).

d. Alternative Approach 3

Alternative Approach 3 would involve constructing approximately 21,000 feet of 18-inch pipeline from the Mystic Avenue regulator in Medford to the Third Street Gate Station (id. at 3-4).²³ This new pipeline would replace the entire J-2 lateral (id.). The existing 14-inch pipeline would be retained for use as part of the 60 psig distribution system for Somerville and Cambridge (id.).

e. Analysis

NSTAR Gas has identified four approaches to providing additional capacity in the Third Street Gate Station area: the proposed project and Alternative Approaches 1, 2, and 3. The proposed project and Alternative Approaches 2 and 3 each involve the construction of new pipeline to replace or

²¹ The Company did not indicate whether Alternate Approach 1 could maintain adequate pressure at MIT by dropping interruptible service to the HRSG at peak periods.

²² The pipeline for Alternative Approach 2 would presumably be rated for 433 psig.

²³ The pipeline for Alternative Approach 3 would presumably be rated for 433 psig.

supplement a segment or all of the J-2 lateral, while Alternative Approach 1 involves an upgrade of the NSTAR-owned segment of the J-2 lateral.

The record indicates that, while Alternative Approach 1 would allow an increase in the pressure of gas delivered at the Third Street Gate Station, flow would still be limited by the existing pipeline's 14-inch diameter. As a result, Alternative 1 would not permit NSTAR Gas to deliver the requested volumes of gas to the repowered Kendall Station while maintaining adequate delivery pressures at MIT during peak periods. In addition, use of Alternative Approach 1 would require the Company to temporarily store and vaporize LNG at the Third Street Gate Station during the upgrade and testing of the J-2 lateral, whereas gas could continue to flow through the J-2 lateral during construction of the proposed project, Alternative 2, or Alternative 3. Given the significant disadvantages of Alternative Approach 1 with respect to meeting the identified need as well as the necessity for establishing a backup supply during construction, the Siting Board focuses its review on the proposed project, Alternative Approach 2, and Alternative Approach 3.

3. Pipeline Performance

NSTAR Gas asserted that, with supplemental compression at Kendall Station, the proposed project and Alternative Approaches 2 and 3 would meet the identified need (*id.* at 3-6). The Company indicated that the lower the pressure at which the gas is delivered, the more energy Mirant Kendall would need to expend to recompress the gas; the Company indicated that it would therefore be beneficial to provide gas to Kendall Station at the highest possible pressure (Tr. 3, at 296-297). The anticipated performance of each alternative is discussed below.

The Company stated that, assuming a minimum inlet pressure of 370 psig and a minimum requirement of 300 psig at MIT, the proposed pipeline could deliver 5430 mcfh to the Third Gate Street Station (Exh. EFSB-N-11-S; Tr. 2, at 283). NSTAR Gas indicated that, with expected delivery rates, the proposed project would deliver gas to Kendall Station at a minimum pressure of approximately 304 psig; thus, the project would not meet Mirant Kendall's request for delivery of 2300 dt/hr of gas at 430 psig and Mirant Kendall would use on-site compression to increase the

pressure (Exh. NGC-3, at 3-1, 3-2; Tr. 3, at 305).²⁴ NSTAR Gas indicated that the proposed project would then meet Mirant Kendall's needs without diminishing delivery pressure to MIT (id.). The Company said the proposed project also would provide additional capacity capable of supplying other customers with roughly 1000 mcfh more than is currently delivered ("excess capacity"), assuming firm transportation of 1965 mcfh to Kendall Station; the excess capacity of approximately 1000 mcfh compares to a current excess capacity of 551 mcfh without repowering Kendall Station (Tr. 3, at 294). Thus, the proposed project would provide additional energy resources to meet the needs of NSTAR Gas customers (including both Mirant Kendall and MIT) (Exh. NGC-3, at 3-4).

NSTAR Gas indicated that Alternative Approach 2 would provide gas to Kendall Station with a delivery pressure of 331 psig, without compression (id.; Tr. 3, at 325). NSTAR Gas indicated that Mirant Kendall would use supplementary compression to increase gas pressure to 430 psig (Exh. NGC-3, at 3-4). The Company stated that Alternative Approach 2 would bypass the existing system and therefore would have no effect on MIT or other customers (Tr. 3, at 322).²⁵

NSTAR Gas stated that Alternative Approach 3 would provide "slightly higher" delivery pressures at Kendall Station than the proposed project (Exh. NGC-3, at 3-5). The Company indicated that Mirant Kendall could use supplementary compression to increase gas pressure to 430

²⁴ The Company's summary of its system analysis study indicates that, with a flow of 2500 mcfh to Kendall Station, pressure ranging from 370 to 433 psig at the Mystic Avenue regulator, and a new 17.25-inch section of the J-2 lateral, MIT could receive 213 mcfh at a delivery pressure that would range from 306 to 380 psig (Exh. EFSB-N-9-S). The modeled pressure of 306 psig at MIT compares to a delivery pressure of 298.2 psig modeled for peak load before Kendall Station is repowered, and compares to MIT's required delivery pressure of 300 or 325 psig (id.; Exh. NGC-3, at 3-4). With expected load growth among customers other than Mirant Kendall and MIT, delivery pressure at MIT would range from 298 to 374 psig by year 2005 (Exh. EFSB-N-9-S Att.; Tr. 2, at 279-281). This range does not remain above the required delivery pressure to MIT of 300 or 325 psig. Nevertheless, the Company claimed that there would be plenty of capacity in the pipeline to serve Somerville and Cambridge for "many years" (Tr. 2, at 279; Tr. 3, at 349).

²⁵ The Company noted that under Alternative Approach 2, there would be two high-pressure pipelines running through the area instead of one; thus, NSTAR Gas would face increased operation and maintenance responsibilities (Tr. 3, at 323).

psig (id. at 3-4). The Company indicated that Alternative Approach 3 would represent an increase in capacity for customers other than Mirant Kendall, both relative to existing conditions and relative to the proposed project (id.; Tr. 3, at 326).

Evidence presented by the Company indicates that none of the project alternatives would consistently deliver gas at the pressure and volume requested by Mirant Kendall, without on-site compression. However, each of the project alternatives could deliver the requested volumes of gas to Kendall Station while maintaining service to other NSTAR Gas customers. Among the three project alternatives, Alternative Approaches 2 and 3 would require the least additional compression of gas at Kendall Station and would provide the most additional capacity for future growth of other customers in Somerville and Cambridge. Accordingly, the Siting Board finds that Alternative Approaches 2 and 3 would be superior to the proposed project with respect to reliability.

4. Environmental Impacts

The Company stated that temporary construction impacts along roadways would be greater for Alternative Approaches 2 and 3 than for the proposed approach because of their greater length (approximately 21,000 feet as compared to approximately 11,775 feet) (Exh. NGC-3, at 3-6). In addition, Alternative Approach 2 would require the Company to acquire and develop a parcel of land in Medford for an interconnect with Algonquin (id.).

The Siting Board notes that Alternative Approach 2 would eliminate the need for the approximately 1000-foot service line required with the other approaches. However, even taking into account the service line, the linear footage of construction required for Alternative Approaches 2 and 3 is nearly twice that required for the proposed project. Alternative Approaches 2 and 3 would traverse urban areas similar to those affected by the proposed project, and therefore likely would have similar types of impacts but over a significantly larger area. Consequently, the Siting Board finds that the proposed project would be superior to Alternative Approaches 2 and 3 with respect to environmental impacts.

5. Cost

NSTAR Gas estimated that the cost of the proposed project following the preferred route would be \$5,263,633 (id. at 3-7).²⁶ The Company estimated that the costs of Alternative Approaches 2 and 3 would be \$7,559,886 and \$9,365,046, respectively (id.). The Company indicated that the higher costs of Alternative Approaches 2 and 3 are due to the longer linear distance of construction, relative to the proposed approach, and the likely need for relatively costly bridge crossings (Exhs. EFSB-PA-3-S; EFSB-PA-6-S). A cost breakout is provided below in Table 1.

TABLE 1: COST COMPARISON AMONG PROJECT APPROACHES

\$ in 000s	Proposed Project	Approach 2	Approach 3
Materials	\$439	\$522	\$763
Construction	\$3845	\$5850	\$7250
Take Station	\$500	\$500	\$500
Contingency	\$478	\$687	\$851
Total Cost Estimate	\$5263	\$7559	\$9365

Source: Exh. NGC-3, at 3-7. Figures rounded to the next lower thousand dollars.

The proposed project involves roughly half the length of pipeline construction required for Alternative Approaches 2 and 3, resulting in a significantly lower project cost. Since Alternative Approach 2 would eliminate the need for the approximately 1000-foot service line required with the other approaches, the costs described by the Company for Alternative Approach 2 may be somewhat overstated relative to the overall construction costs of the other alternatives. Nonetheless, it is likely that the total cost of the proposed project, including the cost of the service line, would be well below that of Alternative Approaches 2 and 3. Consequently, the Siting Board finds that the proposed project would be superior to Alternative Approaches 2 and 3 with respect to cost.

²⁶ The Company indicated that Mirant Kendall is providing the funding for the construction of the pipeline, but that NSTAR Gas will own and maintain the pipeline (Exh. CAM-1-4; Tr. 2, at 261).

6. Conclusions

In the sections above, the Siting Board dismissed Alternative Approach 1, and reviewed three remaining project approaches: the proposed project, Alternative Approach 2, and Alternative Approach 3. The Siting Board found that: (1) Alternative Approaches 2 and 3 would be superior to the proposed project with respect to reliability; (2) the proposed project would be superior to Alternative Approaches 2 and 3 with respect to environmental impacts; and (3) the proposed project would be superior to Alternative Approaches 2 and 3 with respect to cost. The record shows that the proposed project, Alternative Approach 2 and Alternative Approach 3 could provide adequate service to Kendall Station if Mirant Kendall compresses gas it receives. Alternative Approaches 2 and 3 would allow delivery of gas to Kendall Station at a higher pressure, so Mirant Kendall would not need as much supplemental compression as with the proposed project. Also, Alternative Approaches 2 and 3 could have greater system benefits in the long run since there would be more excess capacity available for other customers in the area of the Third Street Gate Station. However, these advantages of Alternative Approaches 2 and 3 are not shown, in the case record, to be critical. Given that any of the three alternatives could, with compression, supply Mirant Kendall's firm demand while continuing reliable service to other customers, the incremental benefits of Alternative Approaches 2 and 3 are limited. Based on the length of pipeline construction required, the proposed project would be expected to have significantly less environmental impact than Alternative Approaches 2 and 3. Also, the record indicates that the cost of the proposed project would be significantly less than Alternative Approaches 2 and 3. The Siting Board concludes that the environmental and cost advantages of the proposed project outweigh the performance advantages of Alternative Approaches 2 and 3. Accordingly, the Siting Board finds that the proposed project would be superior to Alternative Approaches 2 and 3 with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

III. ANALYSIS OF THE PREFERRED AND ALTERNATE FACILITY/ROUTES

The Siting Board has a statutory mandate to implement the policies of G.L. c. 164, §§ 69H-69Q, to provide a reliable energy supply for the Commonwealth with a minimum impact on the

environment at the lowest possible cost. G.L. c. 164, §§ 69H and J. Further, G.L. c. 164, § 69J, requires the Siting Board to review alternatives to planned projects, including “other site locations.” G.L. c. 164, § 69J. In implementing this statutory mandate, the Siting Board requires a petitioner to demonstrate that it examined a reasonable range of practical siting alternatives, and that its proposed facilities are sited at locations that minimize costs and environmental impacts while ensuring supply reliability. CELCo Decision, 12 DOMSB at 323; MMWEC Decision, 12 DOMSB at 116; New England Power Company, 21 DOMSB 325, at 376 (1991).

In Section II.B, above, the Siting Board found that the proposed project would be superior to Alternative Approaches 1, 2, and 3 with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. In Section III.A, below, the Siting Board reviews the Company’s site selection process to determine whether NSTAR Gas examined a reasonable range of practical facility siting options. In Section III.B, below, the Siting Board describes the preferred and alternate routes for the proposed project. Finally, in Section III.C, below, the Siting Board evaluates the environmental impacts, cost, and reliability of the preferred and alternate routes in order to determine whether environmental impacts would be minimized and whether an appropriate balance would be achieved among environmental impacts, cost, and reliability.

A. Site Selection

1. Standard of Review

G.L. c. 164, § 69J provides that a petition to construct a proposed facility must include “a description of alternatives to [the applicant’s] planned action” including “other site locations.” G.L. c. 164, § 69J. In past reviews of alternate site locations identified by an applicant, the Siting Board has required the applicant to demonstrate that it examined a reasonable range of practical siting alternatives. See CELCo Decision, 12 DOMSB at 323; MMWEC Decision, 12 DOMSB at 119; 1998 NEPCo Decision, 7 DOMSB 333, at 374. In order to determine whether an applicant has considered a reasonable range of practical alternatives, the Siting Board has required the applicant to meet a two-pronged test. First, the applicant must establish that it developed and applied a reasonable set of

criteria for identifying and evaluating alternate routes in a manner which ensures that it has not overlooked or eliminated any routes which, on balance, are clearly superior to the proposed route.

CELCo Decision, 12 DOMSB at 324; MMWEC Decision, 12 DOMSB at 119; 1998 NEPCo Decision, 7 DOMSB at 374. Second, the applicant must establish that it identified at least two noticed sites or routes with some measure of geographic diversity. CELCo Decision, 12 DOMSB at 324; MMWEC Decision, 12 DOMSB at 119; 1998 NEPCo Decision, 7 DOMSB at 374.

2. Site Selection Process

a. Identification and Screening of Routes

The Company indicated that its site selection process included: development of threshold criteria, including definition of a study area; identification of six route alternatives based on the application of the threshold criteria; development of screening criteria; and ranking of routing options to determine a preferred and an alternate route (Exh. NGC-3, at 4-1 to 4-27).

The Company indicated that the study area for its proposed project consisted generally of East Cambridge and part of Somerville near Union Square.²⁷ The Company asserted that routes extending beyond the identified area would add unnecessary length and/or additional construction difficulties (id. at 4-4; Exh. EFSB-SS-2 Att.; Tr. 1, at 49). The Company listed the following as threshold criteria for identifying possible routes (Exh. NGC-3, at 4-5, 4-6):

- Follow existing utility or transportation corridors or rights-of-way to minimize environmental and community impacts;
- Avoid crossings of private property to the extent possible;
- Avoid residential areas where acceptable alternatives exist;
- Avoid streets for which a construction moratorium has been set by the Cities of Cambridge and Somerville;

²⁷ More specifically, the Company defined the study area as land within boundaries defined by the MBTA Lowell line corridor and the Monsignor O'Brien Highway on the northeast; the banks of the Charles River on the southeast; Kendall Station, Main Street, and Broadway on the south; Webster Avenue and Union Square on the west; and the J-22 valve on the north (Exhs. NGC-3, at 4-4; EFSB-SS-2 Att.).

- Avoid narrow streets where acceptable wider alternatives are available, to maximize the potential to mitigate traffic impacts;
- Avoid streets where congestion of existing underground utilities presents significant difficulties for construction and/or maintenance of facilities;
- Allow long straight segments in preference to numerous turns; and
- Avoid streets where significant on-going or planned work by the cities or other companies could conflict with construction of the interconnect facilities.

The Company stated that identification of cross-country route alternatives was impossible due to the dense development of the area (id. at 4-2). The Company indicated that the use of existing railroad rights-of-way would be problematic, stating that it had obtained MBTA and/or CSX specifications requiring deep installation and installation within a separate casing, and indicated such installation would pose problems for any pipe repairs and for maintaining cathodic protection of the pipe (id. at 4-4 to 4-5). The Company also cited problems with existing utility congestion on a number of individual streets (id. at 4-6).

The Company stated that after examining the study area in light of its threshold criteria, it identified the following six route alternatives (id. at 4-7 to 4-14):

- Medford/First: This route would proceed from the J-22 valve along the McGrath Highway, onto Medford Street/Gore Street, onto Gore Street, through the Twin City Mall parking lot, onto the O'Brien Highway, Cambridge Street, First Street, Linskey Way, and Third Street to the Third Street Gate Station.
- Fifth Street: This route would proceed from the J-22 valve along the McGrath Highway, onto Medford Street/Gore Street, onto Gore Street, then onto Fifth Street, Binney Street, and Third Street to the Third Street Gate Station.
- Webster Avenue: This route would proceed from the J-22 valve on the McGrath Highway onto Greenville Street, then onto Monroe Street, Stone Avenue, Columbus Avenue, Bonner Avenue, Prospect Street, Webster Avenue, Columbia Street, Lincoln Street, Webster Avenue, Binney Street, and Third Street to the Third Street Gate Station.
- Portland Street: This route would proceed from the J-22 valve along the McGrath Highway onto Medford Street, then onto Portland Street, Binney Street, and Third Street to the Third

Street Gate Station.

- McGrath/First: This route would proceed from the J-22 valve along the McGrath Highway, continuing along the McGrath Highway and on the O'Brien Highway, and then proceeding on Cambridge Street, First Street, Linskey Way, and Third Street to the Third Street Gate Station.
- Linwood/First: This route would proceed from the J-22 valve along the McGrath Highway, onto Linwood Street, returning to McGrath Highway and continuing on the O'Brien Highway, and then proceeding on Cambridge Street, First Street, Linskey Way, and Third Street to the Third Street Gate Station.

The Company stated that it compared the six route alternatives using thirteen screening criteria, including five technical feasibility criteria, seven community and environmental criteria, and cost (Exh. NGC-3, at 4-14 to 4-26). The Company stated that the technical feasibility criteria were used to assess the potential difficulty of construction and maintenance of the interconnection facilities (id. at 4-16). The Company stated that the community and environmental impact criteria were used to assess the potential effects of the interconnection facilities on the human and natural environment (id. at 4-18).

The Company indicated that, for each of the routes, it developed ratings and scores for each of the screening criteria (id. at 4-23, 4-24). The Company explained that it ranked each route as high, medium, or low for each criterion, and then assigned a score of 2 if the route was high ranking, a score of 1 if the route was medium ranking, and a score of 0 if the route was low ranking (id.).

The Company stated that to derive an overall suitability score, it assigned a weight to each criterion based on the project team's judgment of the relative importance of that criterion (id. at 4-24). Criteria that were considered very important were given a weight of 3, criteria that were considered of moderate importance were given a weight of 2, and criteria that were considered of minor importance were given a weight of 1 (id.). The Company stated that the individual criterion score was then multiplied by the weight to derive the weighted score for each criterion for each route (id.). The Company stated that the weighted scores were then totaled for each route alternative (id.). The criteria used to rank the six routes, with weightings in parentheses, are listed below (id. at 4-14 to 4-24).

Technical Feasibility Criteria

- Length of route (2)
- Degree of congestion in underground utilities along route (3)
- Difficulty of railroad crossing (2)
- Reliability/serviceability (3)
- Difficulty of intersection crossings (3)

Community and Environmental Impact Criteria

- Construction impacts on residences (3)
- Proximity to sensitive receptors (1)
- Construction impacts on the traffic system (2)
- Open space/parkland (1)
- Historical sites (1)
- Hazardous material (2)
- Community acceptance²⁸ (3)

Cost Criterion

- Cost (3)

The Company described how it rated each criterion, weighted the criteria, and combined scores, and it presented overall scores for its screening level route alternatives (Exh. NGC-3, at 4-16 to 4-26). Scoring of alternatives is summarized below in Table 2, while route lengths and costs are presented below in Table 3.

²⁸ The Company indicated that it sought input from various stakeholders and either met or spoke with representatives of: the Cambridge Department of Community Development, the Cambridge Department of Public Works, the Somerville Department of Public Works, the Metropolitan District Commission, the East Cambridge Planning Team, the Association of Cambridge Neighborhoods, the MBTA, and the Sewerage Division of the Massachusetts Water Resources Authority (Exhs. NGC-3, at 4-2; EFSB-SS-4).

TABLE 2: SUMMARY OF WEIGHTED SUBSCORES BY CRITERIA GROUP

Route Name	Technical	Community/ Environmental	Cost	Total Score	Overall Rank
Medford/First	15	22	3	40	#1
Fifth Street	20	11	6	37	#2
Webster Avenue	5	5	3	13	#6
Portland Street	9	9	6	24	#4
McGrath/First	5	18	3	26	#3
Linwood/First	2	18	3	23	#5

Note: Higher scores indicate higher suitability.

Source: Exh. NGC-3, at 4-26.

TABLE 3: ROUTE LENGTHS AND COSTS

Route Name	Length in Feet	Estimated Cost	Ultimate Rank
Medford/First	11,775	\$5,263,633	#1
Fifth Street	8,800	\$4,117,782	#2
Webster Avenue	11,200	\$5,467,982	#6
Portland Street	9,300	\$4,641,217	#4
McGrath/First	10,850	\$5,408,478	#3
Linwood/First	10,550	\$5,305,617	#5

Sources: Exhs. NGC-3, at 4-26; EFSB-SS-5-S at 2.

The Medford/First alternative received the highest overall score, while the Fifth Street alternative received the second-best overall score (Exh. NGC-3, at 4-26). The Fifth Street alternative scored highest among the alternatives for many of the more heavily weighted criteria, but received poor scores for construction impacts on residents and for community acceptance (*id.*). The Company noted that the Webster Avenue route scored low for railroad and road intersection crossings and reliability/serviceability; that the Portland Street route scored low for utility congestion and traffic

impacts; and that both the McGrath/First route and the Linwood/First route scored low in technical criteria including utility congestion, railroad crossing, and reliability/serviceability (id. at 4-27).²⁹ The Company remarked that the particular advantages of the Medford/First route are that it: (1) avoids residential neighborhoods more than some other routes; (2) can largely be constructed using normal trench/backfill/compact methods; (3) lacks exposed lengths of pipeline, thus protecting the cathodic protection system; and (4) would not need to be relocated in the event of bridge construction or bridge maintenance work (Tr. 1, at 107).

In developing its overall rankings, the Company assigned to both the Medford/First route and the McGrath/First route scores of 6 for both residential impacts and for community acceptance, and scores of 0 for traffic impacts (Exh. NGC-3, at 4-26). The Company provided a letter from the City of Somerville disagreeing with the Company's analysis rating the McGrath/First and Medford/First routes equally with respect to residential impacts and traffic impacts, and also disagreeing with top ranking for the Medford/First route with respect to community acceptance (Exh. EFSB-SS-12). In its letter, the City of Somerville endorsed the McGrath/First route, citing the low residential impacts of a route along the McGrath Highway, compared to impacts along Medford Street on the Medford/First route (id.).

Based on the screening described above, the Company selected the Medford/First route and the Fifth Street route as the two routes that would undergo more detailed analysis; as the highest scoring route, the Medford/First route was designated the preferred route, while the Fifth Street route was designated the alternate route (Exhs. NGC-3, at 4-27; EFSB-SS-5).

b. Analysis

NSTAR Gas has developed a set of criteria for identifying and evaluating pipeline routing options that address environmental impacts, land use concerns, community issues, cost, and reliability -- types of criteria that the Siting Board has found to be appropriate for the siting of public utility facilities.

²⁹ The Company highlighted technical difficulties that it would face in avoiding existing utilities at a railroad crossing on the Linwood/First and McGrath/First routes, indicating further that railroad crossings constituted the most important distinguishing construction issue among the six routes (Tr. 1, at 55-56, 80).

See MMWEC Decision, 12 DOMSB at 125; Berkshire Gas Decision, 9 DOMSB at 43-44; New England Power Company, 4 DOMSB 109, 167 (1995).

To identify route options for further evaluation, the Company first identified an area that would encompass all viable routing options given the limitations imposed by the locations of the J-22 valve and the Third Street Gate Station. The Company used threshold criteria to identify six routes within this area. The Company then developed a list of 13 community and environmental, technical, and cost criteria, to be used to evaluate these six routing alternatives, and assigned weights to each of these screening criteria based on their relative importance. For each of the identified alternatives, the Company scored the route on each of the 13 screening criteria, then multiplied the unweighted scores by the assigned weights to produce weighted scores. The Company then added the weighted scores to get a total weighted score for each route and ranked the six routes based on the total weighted scores.

The Company's use of a site selection process based on development of weighted scores served to balance the community/environmental impacts, technical issues, and costs of the six routing alternatives and then to rank each route. The Company's allocation of nearly half of overall weight to community/environmental criteria and the remainder to technical and cost criteria was reasonable. The weighting of specific environmental factors appropriately reflected their relative significance; in particular, construction impacts on residences was appropriately stressed. Overall, the Company used a comprehensive, systematic method to compare identified alternatives on the basis of technical feasibility, cost, and environmental and community impacts. The record indicates that the City of Somerville has disagreed with the Company assessment of the Medford/First route with respect to residential and traffic impacts and community support, and advocated the McGrath/First route. However, the record shows that the McGrath/First route scored poorly on technical criteria of utility congestion, railroad crossing, and reliability/serviceability, and received an overall weighted score of only 26 points, 14 less than the high-ranking Medford/First route. Thus, even if the Company's scoring were revised to reflect Somerville's assessment of community and environmental impact advantages of the McGrath/First route, it is unlikely that this route would outscore the preferred route when all criteria are considered.

Accordingly, the Siting Board finds that the Company has developed and applied a reasonable

set of criteria for identifying and evaluating alternate routes in a manner which ensures that it has not overlooked or eliminated any routes which are, on balance, clearly superior to the proposed project.

3. Geographic Diversity

NSTAR Gas considered six geographically diverse routes between the J-22 valve and the Third Street Gate Station. The six alternate routes completely overlap only in segments proximate to the beginning and ending points of the proposed gas pipeline. Each route is clearly distinct, offering a unique set of environmental, reliability, and cost constraints and advantages within the area designated by the Company as encompassing all viable siting options for its proposed gas pipeline. From the identified routes, the Company has selected two practical routes. Although these two routes overlap in segments, each route offers a unique set of environmental and cost constraints and advantages. Consequently, the Siting Board finds that the Company has identified a range of practical gas pipeline routes with some measure of geographic diversity.

4. Conclusions on Site Selection

The Siting Board has found that the Company has developed and applied a reasonable set of criteria for identifying and evaluating alternate routes in a manner which ensures that it has not overlooked or eliminated any routes which are, on balance, clearly superior to the proposed route. In addition, the Siting Board has found that the Company has identified a range of practical pipeline routes with some measure of geographic diversity. Consequently, the Siting Board finds that NSTAR Gas has demonstrated that it examined a reasonable range of practical siting alternatives.

B. Description of Preferred and Alternate Routes

1. Preferred Route

The Company stated that the preferred route is approximately 11,775 feet long and runs through Somerville and Cambridge (Exh. NGC-3, at 1-11). The preferred route begins at the J-22 valve on the McGrath Highway in Somerville, near its intersection with Medford Street and Highland

Avenue (*id.* at fig. 1.2-1, 1-11, 5-14). From this intersection, it follows Medford Street south,³⁰ and continues past Somerville Avenue, crossing under the MBTA's Fitchburg line railroad tracks to the Somerville/Cambridge municipal boundary (*id.* at 1-11, 5-14). Continuing southeast on Gore Street in Cambridge, the preferred route crosses under a CSX railroad track crossing, turns northeast on Rufo Road, runs eastward through the parking lot of Twin City Mall, and then turns southeast along the O'Brien Highway, passing under the MBTA Green Line viaduct at the intersection with Cambridge Street. The route makes a sharp turn west onto Cambridge Street for a very short distance, then proceeds south on First Street, west on Linskey Way, and south on Third Street to the Third Street Gate Station (*id.* at fig. 1.2-1, 1-11).

NSTAR Gas proposed a variation to the preferred route to be used if obstacles at the Cambridge Street/O'Brien Highway intersection prevent construction there (*id.* at 1-11). The variation turns off the O'Brien Highway at its intersection with Gore Street and Second Street, follows Second Street south to Cambridge Street and then follows Cambridge Street east to First Street, where the variation rejoins the preferred route (*id.* at fig. 1.2-1, 1-11). The route variation is 860 feet in length and replaces a 940-foot segment of the preferred route (Exh. RR-EFSB-10). The Company requests that the Siting Board approve both the preferred route and this route variation (Exh. NGC-3, at 1-11).

2. Alternate Route

The Company's alternate route follows the same path as the preferred route from the J-22 valve on the McGrath Highway to the intersection of Gore Street with Rufo Road in Cambridge. At that point, the alternate route continues east on Gore Street, south on Fifth Street, east on Binney Street, and south on Third Street to the Third Street Gate Station (*id.* at fig. 1.2-1). The Company estimated that the alternate route would be 8800 feet in length (*id.* at 1-14).

³⁰ For a portion of its length, approximately between Highland Avenue and Somerville Avenue, Medford Street continues along the McGrath Highway as one-way frontage roadways on either side of the elevated highway (Exh. NGC-3, at 5-14). Medford Street becomes Gore Street at the Somerville/Cambridge municipal boundary (*id.* at fig. 1.2-1). The McGrath Highway becomes the O'Brien Highway at or near the Somerville/ Cambridge municipal boundary (*id.*).

C. Environmental Impacts, Cost, and Reliability of the Preferred and Alternate Facilities

1. Standard of Review

In implementing its statutory mandate to ensure a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost, the Siting Board requires a petitioner to show that its proposed facility is sited at a location that minimizes costs and environmental impacts while ensuring a reliable energy supply. To determine whether such a showing is made, the Siting Board requires a petitioner to demonstrate that the proposed site for the facility is superior to the noticed alternatives on the basis of balancing cost, environmental impact, and reliability of supply. MMWEC Decision, 12 DOMSB at 127; 1999 Berkshire Gas Decision, 9 DOMSB at 40; 1997 BECo Decision, 6 DOMSB at 287.

An assessment of all impacts of a proposed facility is necessary to determine whether an appropriate balance is achieved both among conflicting environmental concerns as well as among environmental impacts, cost, and reliability. A facility which achieves that appropriate balance thereby meets the Siting Board's statutory requirement to minimize environmental impacts at the lowest possible cost. MMWEC Decision, 12 DOMSB at 128; 1999 Berkshire Gas Decision, 9 DOMSB at 46; 1997 BECo Decision, 6 DOMSB at 287.

The Siting Board recognizes that an evaluation of the environmental, cost, and reliability trade-offs associated with a particular proposal must be clearly described and consistently applied from one case to the next. Therefore, in order to determine if a petitioner has achieved the proper balance among environmental impacts and among environmental impacts, cost, and reliability, the Siting Board must first determine if the petitioner has provided sufficient information regarding environmental impacts and potential mitigation measures in order to make such a determination. The Siting Board then can determine whether environmental impacts would be minimized. Similarly, the Siting Board must find that the petitioner has provided sufficient cost information in order to determine if the appropriate balance among environmental impacts, cost, and reliability would be achieved. MMWEC Decision, 12 DOMSB at 128; 1998 NEPCo Decision, 7 DOMSB at 384; Commonwealth Electric Company, 5 DOMSB 273, at 337 (1997).

Accordingly, in the sections below, the Siting Board examines the environmental impacts, reliability, and cost of the proposed facilities along NSTAR Gas' preferred and alternate routes to determine: (1) whether environmental impacts would be minimized; and (2) whether an appropriate balance would be achieved among conflicting environmental impacts as well as among environmental impacts, cost, and reliability. In this examination, the Siting Board compares the preferred and alternate routes to determine which is superior with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

2. Environmental Impacts

In this section, the Siting Board evaluates and compares the environmental impacts of the proposed facilities along the preferred and alternate routes, the proposed mitigation for such impacts, and any options for additional mitigation. The Siting Board then determines whether the environmental impacts of the proposed facilities along the preferred route would be minimized. The subsections below consider impacts to adjacent land uses, traffic disruptions, noise impacts, and potential impacts to land and water resources.

a. Land Use

NSTAR Gas stated that zoning and existing land uses along both routes are similar, but that the preferred route passes through more commercial areas, while the alternate route passes through more residential areas (Exh. NGC-3, at 5-12). The Company estimated land use adjacent to the preferred route as 30% residential, 36% commercial/office, 12% industrial/transportation, 21% mixed residential/commercial/office use, and 1% open space/recreational (Exhs. EFSB-E-2; EFSB-SS-6 Att.). The Company estimated that land use adjacent to the alternate route is 62% residential, 24% commercial/office, and 14% industrial/transportation (*id.*).

The Company stated that, in Cambridge, the preferred route would pass by 12 residential buildings, the preferred route with the variation would pass by 16 residential buildings, and the alternate route would pass by 74 residential buildings (Exh. EFSB-E-3). Most of the additional residential properties along the alternate route are located on Gore and Fifth Streets (Exh. CAM-1-33). In

Somerville, where the preferred and alternate routes are identical, the pipeline would pass by 34 residential buildings (Exh. EFSB-E-3). The Company indicated that properties adjacent to the preferred route variation include one more single-family and three more multi-family residences than the preferred route without the variation (*id.*). Photographs provided by the Company show that most houses along both routes are built close to each other and to the street (Exh. NGC-3, at 5-15 to 5-44). The number and type of residential buildings along the preferred and alternate routes are summarized in Table 4, below.

TABLE 4: ESTIMATED NUMBER OF RESIDENTIAL BUILDINGS

	<u>Cambridge</u>		<u>Somerville</u>	
	Single-Family	Multi-Family	Single-Family	Multi-Family
Preferred Route	4	8 ³¹	6	28
Preferred Route with Variation	5	11	6	28
Alternate Route	8	66	6	28

Source: Exh. EFSB-E-3

NSTAR Gas stated that the principal impacts of the proposed project on neighboring residential properties would be temporary construction noise, temporary loss of on-street parking, and temporarily restricted access to driveways (Exh. CAM-1-33; Tr. 1 at 135-137). The Company stated that it would restore driveway access at night and would identify and provide replacement parking spaces where necessary to mitigate the loss of on-street parking along the route (Exh. CAM-1-33; Tr. at 136). While the Company estimated that construction of the entire pipeline would take at least seven months (Exh. EFSB-E-30), it expected that impacts on individual properties would last no more than several days (Exh. CAM-1-33; Tr. 1, at 137).

The Company stated that no schools, emergency facilities, daycare facilities, or nursing homes

³¹ These include one large apartment building on the north side of the O'Brien Highway and another at the corner of First Street and Binney Street (Exhs. RR-EFSB-17; NGC-3, at 5-9).

are located along either the preferred or the alternate route (Exh. EFSB-SS-14). However, the Company indicated that both the preferred and alternate routes are in close proximity to a City of Cambridge park designated as Gold Star Mother's Park and Gore Field (on Gore Street between Fifth and Sixth Streets), the East Cambridge Health Center (at the corner of Gore Street and Rufo Road), and a Metropolitan District Commission ("MDC") indoor skating rink (at Rufo Road and Gore Street) (id.). The Company also stated that the preferred route runs in close proximity to urban open space along the Lechmere Canal (Exh. NGC-3, at 5-4). The Company stated that pedestrian and vehicular access to businesses at the Twin City Mall and CambridgeSide Galleria would be maintained during construction (Tr. 1, at 139).

The Company stated that the pipeline would be designed and constructed to standards that meet or exceed all applicable federal, state, and industry safety requirements and standards (Exh. NGC-3, at 1-3). In addition, the Company stated it would lay warning tape above the pipeline that would alert future excavators of the gas pipeline buried below (Exh. NGC-3, at 1-3; Tr. 2, at 173). The Company stated that trenches would be backfilled or plated at the end of every working day during the construction period (Exhs. EFSB-E-10; EFSB-E-18).

The record shows that the alternate route passes more than twice as many residential properties as the preferred route. The Siting Board notes that the relative extent of residential units -- a factor with potential bearing on our comparison of residential land use impact -- was not quantified. However, the analysis shows that in Cambridge, the alternate route would affect a residential area extending for several blocks, while the preferred route would affect more limited areas. Accordingly, the Siting Board finds that the preferred route is superior to the alternate route with respect to land use. The record shows that the Company will mitigate the land use impacts of pipeline construction by employing industry-standard safety measures in the design and construction of the pipeline, maintaining access to businesses along the route, and providing mitigation for parking impacts in residential neighborhoods. The Siting Board notes that the land use impacts of the preferred route would be slightly greater if the variation to the preferred route were used, given the residences in proximity to construction along the variation. In order to minimize land use impacts, the Company should use the variation only in the event that unforeseen circumstances prevent the construction of the facilities through the O'Brien

Highway/Cambridge Street intersection. Overall, the Siting Board finds that land use impacts of the proposed project along the preferred route would be minimized.

b. Traffic

The Company asserted that, due to the necessity of working in public ways that are sometimes heavily traveled, sometimes narrow, and sometimes congested, construction traffic impacts would be inevitable (NSTAR Gas Initial Brief at 30). However, the Company stated that all traffic impacts would be temporary (Exh. NGC-3, at 5-13).

The Company identified several measures to mitigate traffic impacts during construction, including limitation of work to low-volume traffic hours, provision of pavement markings and other measures to define construction zone traffic flow, identification of detour routes that are most capable of handling traffic flow, maintenance of safe pedestrian flow, accommodation of loading zones and other business functions, notification of abutting residents by leafleting, coordination with other projects to minimize simultaneous construction projects in the same location, and use of police details (Exhs. NGC-3, at 5-45, 5-46; CAM-1-15; Tr. 1, at 136, 138). The Company stated it would develop a traffic management plan in consultation with the Cities of Somerville and Cambridge and the MDC once the final alignment is determined (Exh. NGC-3, at 5-13). The Company stated that the traffic management plan would identify measures to ensure that pedestrian, bicycle, and vehicular flow is maintained along the route during construction (Exh. EFSB-E-32). The Company also stated that replacement parking spaces would be identified and provided “when necessary to mitigate the temporary loss of on-street parking along the route” (Exh. CAM-1-33; Tr. 1, at 137).

The Company also identified working at night as a means to reduce peak hour traffic disruption (Exh. NGC-3, at 5-45). The Company provided a traffic management plan (Exh. RR-EFSB-24-S) that identified four areas where night work might be necessary: on Medford Street between Somerville Avenue and the MBTA overpass; at the Twin City Mall; on the O’Brien Highway southbound between the Twin City Mall entrance drive and Third Street; and on First Street south of Cambridge Street (Exhs. RR-EFSB-24-S at Sheet 3; RR-EFSB-24-S2). These areas are highlighted on Figure 2 (attached).

The Company asserted that traffic impacts along the preferred and alternate routes would be generally similar, although it considered impacts to be slightly less along the alternate route, due to construction complexities at the sharply angled and congested intersection of the O'Brien Highway and Cambridge Street along the preferred route (Exh. NGC-3, at 5-47).³² The Company estimated that construction at this intersection would take approximately three days to complete (Exh. EFSB-E-24-S), as would construction at the intersection of Cambridge and First Streets (Exh. EFSB-E-24, at 4). Along the alternate route, the Company identified two intersections that also would take approximately three days each to complete: Fifth and Cambridge Streets, and Third and Binney Streets (*id.*). The Company indicated that the alternate route would have a greater impact on residential parking, specifically along Fifth and Gore Streets (Tr. 1, at 135). The Company noted that these streets are only 33 to 34 feet wide (Exh. NGC-3, at 5-37, 5-38, and 5-41).

The Company stated that the O'Brien Highway/Cambridge Street intersection could be avoided by use of the variation to the preferred route (Exhs. NGC-3, at 5-47; EFSB-SS-7-S). However, the Company noted that the City of Cambridge may not approve the location of an additional gas main in Second Street, which is already congested with gas lines and other underground utilities (Exh. RR-EFSB-10). Traffic impacts along the variation would include temporary loss of parking and possible need to alternate traffic from two directions within one lane (Exh. RR-EFSB-10; Tr. 1, at 65).

The City of Cambridge disagreed with the Company's assessment that the alternate route was preferable from a traffic perspective, noting in particular difficulties at the intersection of Binney and Third Streets along the alternate route (Cambridge Reply Brief at 4).³³ The City also questioned the need for night work along the O'Brien Highway, contending that traffic counts on this roadway segment were not high enough to justify night work (*id.*).

³² The Company's route screening analysis reflected a clear preference for the alternate route, as the Fifth Street (alternate) route was scored "high" on traffic impact acceptability and the Medford/First (preferred) route was scored "low" (Exh. EFSB-3, at Table 4.3-2).

³³ The Company indicated that this intersection was congested with utilities (Tr. 1, at 53).

The Company has demonstrated that it is considering a broad array of measures to mitigate construction impacts on traffic. However, one of these measures, the scheduling of work at night, represents a trade-off with construction noise impacts. The Company has identified four areas along the preferred route where nighttime work is being considered, one of which is common to both the preferred and alternate routes. As further discussed in Section III.C.2.c, below, there is the potential for construction noise to disturb neighborhood residents at all four areas.

The record shows that the alternate route would affect traffic and parking on streets which are narrower and more residential than those along the preferred route. However, compared to the unique portion of the preferred route, the volume of traffic on the unique portion of the alternate route would likely be lower and traffic impacts consequently would be less. Accordingly, the Siting Board finds the alternate route would be slightly superior to the preferred route with respect to traffic impacts.

With respect to the traffic impacts of the preferred route, the Siting Board finds that the Company has identified several measures to mitigate traffic impacts during construction and that the Company's draft traffic management plan addresses the significant traffic issues. The Siting Board recognizes that this plan will be refined in consultation with the Cities of Cambridge and Somerville and with the MDC. Accordingly, the Siting Board finds that with implementation of a traffic management plan acceptable to the Cities of Cambridge and Somerville and the MDC, the traffic impacts of the proposed project along the preferred route would be minimized.

c. Noise

NSTAR Gas stated that the proposed project would create no permanent noise impacts along either the preferred or alternate route or at the Third Street Gate Station, although there would be temporary noise impacts associated with the installation of the pipeline (Exh. EFSB-3, at 5-48). The noisiest construction activities would include saw-cutting of pavement, excavation, and any use of jackhammers (Exh. EFSB-E-6). The Company stated that construction equipment would include backhoes, a front-end loader, tamping equipment, air compressors, dump trucks, and pickup trucks (*id.*). The Company stated that normal sound mufflers would be maintained on construction equipment (Exh. NGC-3, at 5-48). The Company indicated that construction noise at a typical residential street

location would occur over the course of a few days (Tr. 1, at 137).

The Company provided the results of a model to simulate the noise from construction, assuming the operation of two dump trucks, a backhoe and a grader engaged in standard public works construction for excavation and finishing (Exh. CAM-RR-1 Att.). The modeling indicated that average outdoor sound levels would be 93.4 decibels, A-weighted (“dBA”) at 20 feet and 89.9 dBA at 30 feet (id.). The Company’s modeling indicated that at 50 feet, a reference distance in the Cambridge Noise Control Ordinance, the average sound level would be 85.5 dBA, and the maximum sound level would be 95.0 dBA (id.).

The Company indicated that an apartment building located at the intersection of the McGrath Highway and Medford Street in Somerville, at the beginning of both the preferred and alternate routes, would be the closest residence to the proposed construction work (Exh. EFSB-E-6). The Company estimated that construction could occur within 20 to 25 feet of the outside walls of the nearest apartments in this building (id.). Information provided by the Company shows that elsewhere along the preferred and alternate routes, some additional residences are within 25 to 30 feet of the proposed construction (Exh. RR-EFSB-17).

The Company provided a copy of the Somerville Noise Control Ordinance, which requires use of exhaust mufflers and prohibits construction noise between 7 p.m. and 7 a.m., Monday through Saturday, and at any time on Sunday (Exh. EFSB-G-5 Att.). The Company also provided a copy of the Cambridge Noise Control Ordinance, which prohibits construction noise after 6 p.m., and until 7 a.m. on weekdays and 9 a.m. on weekends and holidays (id.). The Cambridge ordinance prohibits the operation of a construction device for utility street work that produces a noise level in excess of 86 dBA at a distance of 50 feet (id.). The Company committed to comply with the Cambridge Noise Control Ordinance during construction of all facilities in Cambridge, including those portions of the project that are within the jurisdiction of the MDC (Tr. 2, at 197). The Company also committed to include information about construction noise in the notices it would distribute to abutters along the route, including a telephone number residents can use for complaints or questions (Tr. 2, at 189; Tr. 3, at 392).

The Company stated that construction activity would be planned for daytime hours to the extent

possible, and that if nighttime work were necessary, it would be performed in accordance with applicable local requirements (Exh. NGC-3, at 5-48).³⁴ The Company also identified noise mitigation techniques that might be appropriate for nighttime construction, including the use of flagmen instead of back-up beepers, and the use of portable “noise tents,” which shield the operator and provide a noise barrier (Exh. RR-EFSB-18). As mentioned above, the Company identified four areas under consideration for night work in its traffic management plan:

- ? on Medford Street, between Somerville Avenue and the MBTA overpass;
- ? in the Twin City Mall parking lot;
- ? on the O’Brien Highway southbound, between the Twin City Mall entrance drive and Third Street; and
- ? on First Street, south of Cambridge Street

(Exhs. RR-EFSB-24-S at Sheet 3; RR-EFSB-24-S2). These areas are highlighted on Figure 2 (attached).

The Company estimated the numbers of residences in the vicinity of some of these potential nighttime work areas (Exh. RR-EFSB-17-S). Along Medford Street, the Company identified one residence east of the overpass that is potentially within 30 to 40 feet of a nighttime work area, if the nighttime work extends as far east as the overpass (*id.*). Near the O’Brien Highway, the Company identified one residence on Sciarappa Street north of Winter Street that is within 30 to 40 feet of the pipeline construction area (*id.*).³⁵ In the vicinity of the Twin City Mall parking lot, information provided by the Company shows residential properties along Gore Street within about 370 feet on the opposite side of Gore Park (Exhs. NGC-3, at 5-38 and 5-40; EFSB-SS-6 Att.; RR-EFSB-6). The Company stated that along First Street, the abutters are primarily commercial, with the exception of one large apartment building (Exh. EFSB-3, at 5-9).

³⁴ The Company noted the need for a variance if any work is to be done at night in Cambridge (Tr. 2, at 184).

³⁵ The Company originally asserted that there are two single family residences fronting on Winter Street between Sciarappa Street and Third Street with backyard exposure to the O’Brien Highway (Exh. RR-EFSB-17).

The Company asserted that, since the preferred and alternate routes are similar from a construction standpoint, the pace of construction, the need for nighttime work, and the extent of noise impacts all should be similar (Exh. NGC-3, at 5-48). The Company did not present a traffic management plan for the alternate route. Therefore, other than the Medford Street location (which is common to both the preferred and alternate routes), locations along the alternate route that might require nighttime work were not identified for the record.

On brief, the City of Cambridge asserted that NSTAR Gas has not demonstrated how it would minimize nighttime construction noise impacts without committing to noise specifications in contracts or exploring other ways of mitigating noise at night (Cambridge Reply Brief at 2). Cambridge requested that the Company be required to obtain City approval of a construction work plan that includes nighttime noise mitigation measures (Cambridge Initial Brief at 6; Cambridge Reply Brief at 2). The Company asserted that its traffic management plans address the locations where nighttime work will be needed, and the detailed plans for work in those locations (NSTAR Gas Reply Brief at 3). Further, the Company noted that the City has authority to review and approve the Company's plans for construction work in public streets as part of the street opening approval process (Exh. EFSB-E-25-S; NSTAR Gas Reply Brief at 3). The Company therefore objected to the City's request for a separate construction work plan (NSTAR Gas Reply Brief at 3).

The record demonstrates that the noise impacts of the proposed project would be limited to temporary noise associated with construction activities. The record shows that, given the presence of residences along substantial portions of the route, overall construction noise impacts would be minimized by confining construction work to daytime hours to the maximum extent possible. The record in this proceeding is unclear as to the necessity and precise geographic extent of nighttime construction, and whether such construction can be undertaken consistent with local restrictions.

The City of Cambridge has requested that the Company be required to present and obtain City approval of a construction work plan that includes nighttime noise mitigation measures. The Siting Board agrees that the Company's noise mitigation plan should be developed in further detail prior to construction. The Company, the MDC, and the Cities of Cambridge and Somerville may have conflicting interests regarding the timing and procedures for construction relative to noise, traffic

impacts, duration of work, and other considerations. Since mitigation of noise and traffic impacts may conflict, the Company's noise mitigation strategy likely will need to be developed in conjunction with its traffic management plan to determine the extent of any nighttime work. To ensure that the noise impacts of any nighttime construction are minimized, the Siting Board directs NSTAR to submit to the Siting Board a plan, developed in consultation with the MDC and Cities of Cambridge and Somerville, which minimizes, and if possible avoids, work at night near residential areas and sets forth measures to mitigate the noise impacts of any nighttime construction through contract specifications or otherwise.

The Company has stated that it would notify all abutters regarding noise related to construction work. The Siting Board notes that noise from nighttime construction has the potential to affect residents who are not direct abutters. Therefore, in addition to any noise mitigation measures developed in consultation with Cambridge, Somerville, and the MDC, the Siting Board directs the Company to provide advance written notification to residents at properties within 100 feet of areas where work is to occur at night.

The Siting Board finds that, with implementation of the above conditions, the noise impacts of the proposed project along the preferred route would be minimized.

The record shows that the preferred and alternate routes would be comparable with respect to the types and volume of noise generated during construction. However, the record also indicates that the preferred route has fewer adjacent residences. This suggests that daytime noise impacts to residents would be minimized by selecting the preferred route. At the same time, the Company identified areas along the preferred and alternate routes where traffic concerns may warrant nighttime construction -- a factor of potential importance in evaluating relative noise impacts.

With respect to noise impacts overall, the Siting Board notes that while the preferred route would affect a smaller number of residents than the alternate route, more residents along the preferred route may be affected at night. Consequently, if the Company does perform work at night, use of the preferred route or the alternate route would result in comparable noise impact; if the Company does not engage in nighttime construction, use of the preferred route would result in less noise impact than use of the alternate route. On balance, therefore, the Siting Board finds that the preferred route is superior to the alternate route with respect to noise.

d. Land and Water Resources

NSTAR Gas assessed the impact of the construction of the proposed facilities with respect to land and water resources, including wetlands, wildlife, hazardous waste sites, historical and archeological resources, and trees. The Company contended that construction of the proposed facilities along either the preferred or alternate route would not adversely affect open spaces or wildlife (Exh. NGC-3, at 5-6). The Company asserted that, due to the urban nature of the project area, no significant wildlife areas exist near the proposed project (*id.* at 5-4). The Company stated that, while typical urban wildlife is present in the area, no federally-listed threatened or endangered species are located in the vicinity of the proposed project (Exhs. NGC-2, at App. A; NGC-3, at 5-4), and that the Natural Heritage and Endangered Species Program (Massachusetts Division of Fisheries & Wildlife) has no record of rare plants or animals or exemplary natural communities in the area (Exh. EFSB-E-12 Att.).

The Company indicated that, where trees are present along the project route, a Company arborist will oversee excavation and any root cutting to insure tree health, and will make additional recommendations to help preserve trees (Exh. EFSB-E-7). The Company stated that it is NSTAR's policy to replace with a similar tree any irreparably damaged tree with a diameter at breast height ("dbh") of up to 3 to 4 inches, and to replace larger irreparably damaged trees with additional 3- to 4-inch dbh trees of the same total dollar value as the damaged trees prior to construction (Exh. RR-EFSB-19).³⁶

The Company indicated that approximately six evergreen trees, 12 to 15 feet in height, are located within the proposed pipeline easement on Twin City Mall property (Exh. RR-EFSB-6 Att.; Tr. 3, at 352).³⁷ The Company indicated that it would cost approximately \$850 per tree to replace these trees with trees of the same height and species (Exh. RR-EFSB-22). The Company provided

³⁶ The Company indicated that the dollar value of trees would be determined by a valuation method published by the International Society of Arboriculture in its Guide for Plant Appraisal, 9th Edition (Exh. RR-EFSB-19).

³⁷ The Company stated that the proposed easement was located at the edge of Twin City Mall's property in accordance with the property owner's preference (Tr. 3, at 353).

information showing that the trees are owned and maintained by the City of Cambridge and are considered part of the landscaping of the adjacent park (Exh. RR-EFSB-7; Tr. 3 at 351). The Company stated that it would route the pipeline between the trees, rather than cut down any trees (id. at 351-352). The Company indicated that the owner of the Twin City Mall is planning modifications to the property that would include the relocation of some existing trees and the planting of new trees (Exh. RR-EFSB-21). The Company stated it would continue to communicate with the owner regarding both the location of the easement and ways to minimize or avoid impacts to new, existing, or relocated trees (id.).

NSTAR Gas asserted that the proposed pipeline would have no impact on historical or archaeological resources because it would be located underground (Exh. NGC-3, at 5-13). Further, the Company asserted that there is little likelihood of encountering undisturbed archaeological resources during construction (id.). The Company stated that the preferred route would pass adjacent to two historic districts and one historic site, and near several additional historic sites (Exhs. NGC-3 at 5-13; EFSB-SS-6 Att.).³⁸ The Company provided a letter from the Massachusetts Historical Commission (“MHC”) stating that MHC has determined that the project would have no effect on identified properties and districts listed in the State and National Registers of Historic Places (Exh. EFSB-G-3 Att.).

NSTAR Gas indicated that it identified known oil and hazardous materials (“OHM”) disposal sites along the preferred and alternate routes from the Massachusetts Department of Environmental Protection’s (“MADEP”) database of disposal sites and reportable releases (Exhs. NGC-3, at 5-5; EFSB-E-1-S Att.; Tr. 1, at 112). As summarized in Table 5, below, the Company indicated that there

³⁸ The Company stated that the preferred route would pass adjacent to the East Cambridge National Historic District and near the Winter Street Historic District; that it would pass adjacent to the historic Athenaeum Press Building; and that it would be near several additional historic properties (Exh. NGC-3, at 5-13). The Company stated that the alternate route would pass adjacent to the East Cambridge National Historic District and to the Blake and Knowles Steam Pump Company Historic District, and near several additional historic properties (id.).

are ten active³⁹ OHM sites along the preferred route and three active sites along the alternate route (Exh. EFSB-E-1-S Att.).⁴⁰ The Company identified three of these sites as having the potential for contamination extending into the street right-of-way under consideration for construction (Exh. RR-EFSB-11).⁴¹ One of these three sites is common to both routes, while the other two are unique to the preferred route (Exhs. RR-EFSB-11; EFSB-E-1-S). The Company noted that the MADEP database is constantly updated as new sites are added or older sites are closed (Exh. EFSB-E-1).

TABLE 5: COMPARISON OF OHM SITES ALONG PREFERRED AND ALTERNATE ROUTES

	Preferred	Alternate
Total OHM Sites in MADEP Database	17	9
Active OHM Sites	10	3
Sites with Potential to Contaminate	3	1

Sources: Exhs. EFSB-1-S Att.; RR-EFSB-11.

NSTAR Gas stated that soil that is encountered during excavation, including limited amounts of

³⁹ In this context, “active” means that response actions have not been completed at the sites and that the potential to encounter contamination during construction exists (Tr. 1, at 114 and 118).

⁴⁰ At the hearing, the Company said there were nine active sites along the preferred route (Tr. 1, at 122), but the map and table provided by the Company as Exh. EFSB-E-1-S show three active sites common to both the preferred and alternative routes, with seven additional sites on the preferred route alone, and one additional site possibly located along the alternate route alone. The Company indicated that the location of this last site was not described in the MADEP database in sufficient detail to determine whether or not it was on the alternate route (*id.* at 121).

⁴¹ The Company summarized the results of its record searches at MADEP (Exh. RR-EFSB-11). One site, at 306-308 McGrath Highway in Somerville, along both preferred and alternate routes, involved multiple releases (of perchloroethylene, trichloroethylene, and heating oil) and discolored soil identified at a depth of 11 to 13 feet (*id.*). The other two sites, at 182-186 and 188-198 First Street in Cambridge, along the preferred route, had petroleum releases including gasoline and diesel fuel; offsite migration of contamination was said to be limited to groundwater and soil just above groundwater (*id.*).

segregated contaminated soil, will be reused as backfill at the point of original excavation, to the extent feasible (Exh. NGC-3, at 5-5, 5-6).⁴² The Company stated that a Massachusetts Licensed Site Professional will oversee soil management along the entire route (id.).⁴³ The Company also stated that its specifications would require the excavation and construction contractor to maintain compliance with applicable health and safety and environmental laws, regulations, guidelines, and policies, including but not limited to Occupational Safety and Health Administration (“OSHA”) regulations, Cambridge and Somerville regulations, MADEP regulations, and Massachusetts fire prevention regulations (id.). The Company judged the alternate route slightly superior to the preferred route with respect to hazardous materials sites, due to the greater number of such sites along the preferred route with ongoing Environmental Response Actions per MADEP regulations (id. at 5-6).

The Company indicated that neither the preferred nor the alternate route crosses wetlands, 100-year flood zones, tidelands, or waterways (Exh. NGC-3, at 5-3), falls within any wetland or wetland buffer zones (Exh. CAM-1-26), or is near any waterbody or floodplain defined under the Massachusetts Wetlands Protection Act (Exh. NGC-3, at 5-3), or by the Federal Emergency Management Agency (id.). The Company stated that neither the preferred nor alternate route passes through tidelands subject to G.L. c. 91, §1 et seq. (Waterways) (id. at 5-3).

NSTAR Gas stated that the proposed project would not require the use or discharge of water during construction or operation (Exhs. EFSB-E-9; EFSB-E-11). The Company stated that it does not expect to encounter groundwater during construction, but if it does or if stormwater enters the trench,

⁴² The Company indicated that the maximum amounts of contaminated soil that can be backfilled by NSTAR per OHM disposal site, pursuant to Utility-Related Abatement Measures of the Massachusetts Contingency Plan at 310 CMR, § 40.0460, are 100 cubic yards of soil contaminated with petroleum and 20 cubic yards of soil contaminated with hazardous materials (Exh. NGC-3, at 5-5).

⁴³ The Company stated that if contaminated groundwater is encountered during construction activities, the water would be handled in accordance with MADEP and U.S. Environmental Protection Agency (“USEPA”) policies, likely including issuance of an Emergency National Pollution Discharge Elimination System Permit Exclusion from USEPA Region I (Exh. NGC-3, at 5-5).

the Company would pump the water into sedimentation control systems (e.g., hay bale dams) prior to discharge to storm drains (Exhs. EFSB-E-8; EFSB-E-9; EFSB-E-10). The Company also would take measures to keep hazardous construction materials away from the trench and handle any spills in accordance with the Massachusetts Contingency Plan 310 CMR, § 40.0000 et. seq. (Exh. EFSB-E-8).

The record indicates the presence of no significant wetlands, water resources, wildlife areas, or historic or archeologic resources that would be adversely affected by the project along either the preferred or the alternate route. Although there are more OHM sites along the preferred route than along the alternate route, the record does not demonstrate that the likelihood of finding OHM differs significantly between the two routes. The record does indicate that appropriate measures will be taken to prevent the migration of sediment and any hazardous materials from construction areas into the storm sewer system. Accordingly, the Siting Board finds that the preferred route would be comparable to the alternate route with respect to land and water resources and that the land and water resource impacts of the proposed project along the preferred route would be minimized.

e. Overall Environmental Impact

In the sections above, the Siting Board has reviewed the evidence presented regarding the environmental impacts of the proposed project along the preferred and alternate routes. The Siting Board finds that NSTAR Gas has provided sufficient information on the environmental impacts of the proposed project, including information on the potential for mitigation, for the Siting Board to determine whether the environmental impacts would be minimized.

The principal differences between the environmental impacts of the preferred and alternate routes stem from the land uses adjacent to the two routes. Related to the issue of land use are construction noise impacts and traffic disruptions. The Siting Board has found that the preferred route would be superior to the alternate route with respect to land use. The Siting Board has found that the alternate route is slightly superior with respect to traffic impacts. With respect to noise, the Siting Board has found the preferred route superior to the alternate route. The Siting Board also has found that the two routes are comparable with respect to land and water resources. On balance, the Siting

Board finds that the preferred route is superior to the alternate route with respect to environmental impacts.

The Siting Board has found that the land use, traffic, noise, and land and water resources impacts of the project along the preferred route would be minimized. Consequently, the Siting Board finds that the environmental impacts of the proposed project along the preferred route would be minimized.

3. Facility Cost

The Company provided cost estimates indicating that construction of the proposed pipeline along the preferred route would cost approximately \$5,263,633, as compared to an estimated \$4,117,782 for the alternate route (Exh. NGC-3, at 4-23, 5-49).⁴⁴ Excluding gate station modifications and excluding the Company's 10% contingency allowance, the comparison is \$4,285,121 for the preferred route versus \$3,243,438 for the alternate route (id. at 4-23).

The record shows that the cost of constructing the pipeline along the proposed route could exceed the corresponding costs for the alternate route by approximately \$1.1 million, or 32%.⁴⁵ Accordingly, the Siting Board finds that the alternate route would be superior to the preferred route with respect to cost.

4. Reliability

The Company stated that the preferred route for the pipeline is approximately 2.2 miles long (Exh. NGC-3, at 1-11), while the alternate route is about 1.7 miles (Exh. NGC-3, at 1-14). Along both routes, the pipeline would be built underground in urban areas (Exh. NGC-3, at 1-4). The same construction techniques would be used for both routes (id. at 1-4 through 1-14), and the same

⁴⁴ The Company noted that these costs do not include costs associated with any delay in obtaining permits and approvals for construction, which could potentially be greater for the alternate route (Exh. NGC-3, at 5-49).

⁴⁵ Including gate station modifications and 10% overall contingency, the whole project using the preferred route would cost approximately 28% more than the project using the alternate route.

corrosion control system would be used for both.⁴⁶ In its application of screening criteria to the six pipeline routes initially considered, the Company scored the alternate route as “high” for reliability/serviceability, and the preferred route as “medium.” However, the record does not indicate how the Company apportioned these scores between reliability and serviceability. Given the similarity of the two routes with respect to length, construction environment and techniques, and corrosion technology, the Siting Board finds that the two routes would be comparable with respect to reliability.

5. Conclusions on Facility Routing

The Siting Board has found that the preferred route would be superior to the alternate route with respect to environmental impacts, that the alternate route would be superior to the preferred route with respect to cost, and that the two routes would be comparable with respect to reliability. In balancing environmental impact and cost, the Siting Board has given significant weight to the fact that the preferred route has fewer impacts on residential areas. Accordingly, the Siting Board finds that the preferred route would be superior to the alternate route with respect to providing a reliable energy supply to the Commonwealth with a minimum impact on the environment at the lowest possible cost. The Siting Board also finds that the proposed project along the preferred route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost.

IV. DECISION

The Siting Board’s enabling statute directs the Siting Board to implement the energy policies contained in G.L. c. 164, §§ 69H to 69Q, to provide a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. G.L. c. 164, § 69H. In

⁴⁶ The Company stated that the cathodic protection corrosion control system used on the preferred route would not be effective if the pipeline were to come in contact with air (Exh. NGC-3, at 4-5). Certain types of bridge or railroad crossings, as encountered by several of the rejected route alternatives, entailed such exposure (*id.*; Tr. 1, at 107-108). Because the preferred and alternate routes involve all the same bridge and railroad crossings, the Siting Board concludes that the cathodic protection system would be equally effective on both routes.

addition, the statute requires that the Siting Board determine whether plans for the construction of energy facilities are consistent with current health, environmental protection, and resource use and development policies as adopted by the Commonwealth. G.L. c. 164, § J. In addition, G.L. c. 164, § 69J requires that a facility proposed by a natural gas company required to file a long-range forecast pursuant to G.L. c. 164, § 69I be consistent with that company's most recently approved long-range forecast.

In Section II.A, above, the Siting Board determined that the Company has established that its existing system is inadequate to serve its anticipated load growth in the Third Street Gate Station area with acceptable reliability, and consequently found that there is a need for additional energy resources in the area of Third Street Gate Station in Cambridge. Further, in Section II.A, the Siting Board found that the proposed project is consistent with the Company's most recently approved long-range forecast.

In Section II.B, above, the Siting Board found that: (1) Alternative Approaches 2 and 3 would be superior to the proposed project with respect to reliability; (2) the proposed project would be superior to Alternative Approaches 2 and 3 with respect to environmental impacts; (3) the proposed project would be superior to Alternative Approaches 2 and 3 with respect to cost. On balance, the Siting Board found that the proposed project would be superior to Alternative Approaches 2 and 3 with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost.

In Section III.A, above, the Siting Board found that the Company has developed and applied a reasonable set of criteria for identifying and evaluating alternate routes in a manner which ensures that it has not overlooked or eliminated any routes which are, on balance, clearly superior to the proposed project. The Siting Board also found that the Company has identified a range of practical gas pipeline routes with some measure of geographic diversity. Consequently, the Siting Board found that NSTAR Gas Company has demonstrated that it examined a reasonable range of practical siting alternatives.

In Section III.C, above, the Siting Board reviewed the environmental impacts of the approximately 2.2 mile route in light of related regulatory or other programs of the Commonwealth, including programs related to wetlands protection, rare and endangered species, historic preservation,

and the prevention and control of the release of oil and hazardous materials. As evidenced by the above discussions and analyses, the proposed 2.2 mile pipeline along the preferred route and variation to that route, would be generally consistent with the identified requirements of all such programs.

In Section III.C, above, the Siting Board found that the preferred route would be superior to the alternate route with respect to providing a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. The Siting Board also found that with the implementation of the conditions addressing construction noise impacts, and compliance with all applicable local, state, and federal requirements, the environmental impacts of the proposed project along the preferred route would be minimized. Further, in Section III.C, the Siting Board also found that the proposed project along the preferred route would achieve an appropriate balance among conflicting environmental concerns as well as among environmental impacts, reliability, and cost.

Accordingly, the Siting Board APPROVES the Company's application to construct one 2.2 mile, 18 inch natural gas pipeline in Somerville and Cambridge, Massachusetts using the Company's preferred route and, in the event that unforeseen circumstances prevent the construction of the facilities through the O'Brien Highway/Cambridge Street intersection, the variation to that route, subject to the following conditions:

- A. To minimize nighttime construction noise impacts, the Company shall submit to the Siting Board a plan, developed in consultation with the MDC and Cities of Cambridge and Somerville which minimizes, and if possible avoids, work at night near residential areas and sets forth measures to mitigate the noise impacts of any nighttime construction through contract specifications or otherwise.
- B. The Siting Board directs the Company to provide advance written notification to residents at properties within 100 feet of areas where work is to occur at night.

The Siting Board notes that the findings in this decision are based on the record in this case. A project proponent has an absolute obligation to construct and operate its facility in conformance with all aspects of its proposal as presented to the Siting Board. Therefore, the Siting Board requires the Company to

notify the Siting Board of any changes other than minor variations to the proposal so that the Siting Board may decide whether to inquire further into a particular issue. The Company is obligated to provide the Siting Board with sufficient information on changes to the proposed project to enable the Siting Board to make these determinations.

Denise L. Desautels
Hearing Officer

Dated this 14th day of December, 2001.

APPROVED by the Energy Facilities Siting Board at its meeting of December 13, 2001, by the members and designees present and voting: James Connelly (Chairman, DTE/EFSB); Deirdre K. Manning (Commissioner, DTE); W. Robert Keating (Commissioner, DTE); David Paglia (for David L. O'Connor, Commissioner, Division of Energy Resources); and Joseph Donovan (for Elizabeth Ames, Director of Economic Development).

James Connelly, Chairman
Energy Facilities Siting Board

Dated this 13th day of December, 2001.

Appeal as to matters of law from any final decision, order or ruling of the Siting Board may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the order of the Siting Board be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Siting Board within twenty days after the date of service of the decision, order or ruling of the Siting Board, or within such further time as the Siting Board may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the clerk of said court. (Massachusetts General Laws, Chapter 25, Sec. 5; Chapter 164, Sec. 69P).