

COMMONWEALTH OF MASSACHUSETTS
Energy Facilities Siting Board

In the Matter of the Petition of
Fore River Development, LLC for Approval
to Construct a Bulk Generating Facility in
in the Town of Weymouth, Massachusetts

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EFSB 98-7C

FINAL DECISION
PROJECT CHANGE

Selma Urman
Presiding Officer
September 18, 2006

On the Decision:
Barbara Shapiro
William Febiger

APPEARANCES:

John A. DeTore, Esq.
Robert D. Shapiro, Esq.
Rubin & Rudman LLP
50 Rowes Wharf
Boston, Massachusetts 02110
FOR: Sithe Edgar Development LLC

Mary Grover, Esq.
Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199
FOR: Boston Edison Company, d/b/a NSTAR Electric
Intervenor

Frank Singleton
60 Bluff Road
Weymouth, Massachusetts 02191
FOR: Fore River Watershed Association
Intervenor

Peter S. Lapolla, Director
Braintree Conservation Commission
One John Fitzgerald Kennedy Memorial Drive
Cambridge, Massachusetts 02184
FOR: Braintree Conservation Commission
Interested Person

Edward L. Selgrade, Esq.
200 Wheeler Road, 4th Floor
Burlington, Massachusetts 01803
FOR: American National Power, Inc.
Interested Person

Mary Beth Gentleman, Esq.
Foley, Hoag & Eliot LLP
One Post Office Square
Boston, Massachusetts 02109
FOR: USGen New England, Inc.
Interested Person

Robert L. Dewees, Jr., Esq.
Nixon Peabody LLP
101 Federal Street
Boston, Massachusetts 02110
FOR: New England Power Company and
Massachusetts Electric Company
Interested Persons

J. Gary Peters
34 Bluff Road
Weymouth, Massachusetts 02191
Interested Person

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Explanation</u>
Algonquin	Algonquin Gas Transmission Company
Alternative Fuel Plan	Applicant's proposal to increase number of days of oil burning and to use different type of oil
BACT	Best available control technology
<u>Berkshire Compliance Decision</u>	<u>Berkshire Power Decision on Compliance, 7 DOMSB 423 (1997)</u>
CO	Carbon monoxide
CO ₂	Carbon dioxide
Company	Fore River Development, LLC
Conditional Air Permit	MDEP Conditional Major Comprehensive Plan Approval/Prevention of Significant Deterioration Permit
EFSB	Energy Facilities Siting Board
EPA	United States Environmental Protection Agency
<u>Final Decision</u>	<u>Sithe Edgar Development LLC, 10 DOMSB 1 (2000)</u>
Fore River	Fore River Development, LLC
gpd	Gallons per day
ISO-NE	Independent System Operator-New England
LSD	Low sulfur diesel fuel
MDEP	Massachusetts Department of Environmental Protection
mgd	million gallons per day
mmBtu	million British thermal units
MW	Megawatt
NO _x	Nitrogen oxides
NPDES	National Pollution Discharge Elimination System
PM	Particulates
PM-10	Fine particulates of 10 microns or less

ppm	Parts per million
PSD	Prevention of significant deterioration
Sithe Edgar	Sithe Edgar Development, LLC
Sithe Mystic	Sithe Mystic Development, LLC
Siting Board	Energy Facilities Siting Board
SO ₂	Sulfur dioxide
SO _x	Sulfur oxides
Town	Town of Weymouth
tpy	Tons per year
ULSD	Ultra-Low Sulfur Diesel Oil
VOC	Volatile Organic Compound

The Energy Facilities Siting Board hereby APPROVES, subject to conditions, changes to the Fore River Development project as further described below.

I. INTRODUCTION

On February 10, 2000, the Energy Facilities Siting Board (“Siting Board”) conditionally approved the petition of Sithe Edgar Development LLC¹ to construct a natural gas-fired combined-cycle, electric generating facility with a net nominal electrical output of 775 megawatts (“MW”) in the Town of Weymouth, Massachusetts (“Town”). Sithe Edgar Development LLC, 10 DOMSB 1 (2000) (“Final Decision”). The Siting Board approved, inter alia, the use of low sulfur diesel oil (“LSD”) as backup fuel, and referenced the Company’s plan to seek a Massachusetts Department of Environmental Protection (“MDEP”) permit for facility operations that included backup oil firing limited to 720 hours per year or 30 days per year during periods of gas curtailment. Final Decision at 39. To date, oil firing has not yet been commissioned at the Fore River facility (Exh. PC-AFP-1, at 4).

On April 14, 2006, Fore River filed a notice of project change with the Siting Board (“April 14, 2006 Filing”)² seeking to increase the number of days Fore River could burn oil at the facility while using ultra-low sulfur diesel oil (“ULSD”) (“Alternative Fuel Plan”) (Exh. PC-AFP-1, at 4). Under the Alternative Fuel Plan, the facility would use ULSD instead of LSD as a backup fuel, when ULSD is available, and there would be no explicit limit on the number of hours of oil-firing so long as the existing maximum levels in the MDEP air permit are met (id.).³

¹ The Siting Board notes that since the issuance of the Final Decision, the ownership of the subject facility has changed twice. In November 2002, Sithe Edgar Development, LLC transferred ownership of the facility to Exelon Fore River Development, LLC. Thereafter, on January 2004, Fore River Development, LLC (“Fore River” or “Company”) became the owner of the facility.

² The Company’s April 14, 2006 Filing of Notice of Project Change is hereby marked for identification and moved into evidence as Exh. PC-AFP-1.

³ LSD is fuel oil that does not exceed a 0.05% sulfur content by weight; ULSD is fuel oil that has less than 6% of the sulfur content of LSD (Exh. PC-AFP-1, at 3, 5). The Company noted that the availability of ULSD, especially in the near term, is dependent on the ULSD producer’s ability to meet the new emission regulatory requirements, as well as the changing market demand (id. at 4).

A. Procedural History

The Company filed responses to eight information requests issued by Siting Board staff.⁴ Although the Siting Board afforded parties to the proceeding an opportunity to file comments and issue information requests regarding the proposed project change, no party filed comments or information requests. The Siting Board did not conduct an evidentiary hearing in this proceeding.

B. Scope of Review

In its approval of the original project, the Siting Board required the owner to notify it of any changes other than minor variations to the proposal as presented to the Siting Board, so that it might decide whether to inquire further into such issues. Final Decision at 150-151. The standard of review to determine whether further inquiry is warranted was articulated by the Siting Board in the Berkshire Power Decision on Compliance (“Berkshire Compliance Decision”) 7 DOMSB 423, at 437 (1997). In the Berkshire Compliance Decision, the Siting Board declined to make further inquiry regarding certain project changes if the change did not alter in any substantive way either the assumptions or conclusions reached in its analysis of the project’s environmental impacts in the underlying proceeding. Id.; see also IDC Bellingham LLC Decision on Compliance, 11 DOMSB 27, at 38-39 (2000).

In the present case, the Siting Board notes that the parameters for use of oil as a secondary fuel under the proposed Alternative Fuel Plan differ from those used by the Siting Board in the Final Decision. In the Final Decision, the Siting Board based its approval on the assumption that oil would be used as a backup fuel for a maximum of 30 days annually during periods of gas curtailment (and more likely the use of oil for 10-20 days annually) Final Decision at 38-39. Under the Alternative Fuel Plan, the assumption of a 30 day annual maximum use of oil is no longer applicable, since the Company now proposes to use oil as a backup fuel for periods expected to total up to 60 days annually. Accordingly, the Siting Board finds that further inquiry is necessary in order to determine whether Siting Board should approve the proposed project change, and if so, to determine whether: (1) additional mitigation is required regarding potential increases in environmental impacts; and (2) a re-balancing of such impacts with reliability and diversity of supply is needed.

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The Company’s responses to the Siting Board’s information requests are hereby marked for identification and moved into evidence as Exh. EFSB-AFP-1 through Exh. EFSB-AFP-8.

II. ANALYSIS OF PROJECT CHANGES

A. Purpose of Project Change

The Company asserted that the Alternative Fuel Plan would allow the Company to operate more reliably in a regional electricity market which has changed dramatically since the Siting Board approved the facility in 2000 (Exh. PC-AFP-1, at 2). Specifically, the Company stated that the proposed change would: (1) allow the facility to operate more often and more reliably; (2) help New England address concerns relative to reliability and fuel diversity; and (3) reduce the environmental impacts associated with the emissions of sulfur dioxide and likely other pollutants at the Fore River facility (id.). The Company asserted that it would not be economical for Fore River to operate on oil for only those limited instances when natural gas is curtailed (id.). Fore River emphasized that it must have the flexibility to operate on oil when economic to do so, consistent with the strict emission limits imposed on the facility by MDEP (id. at 5).

The Company noted that developing a plan for burning oil when it is economic to do so would help ISO-NE and the region address pressing near-term reliability issues (Exh. EFSB-AFP-3). The Company provided an interim report prepared for ISO-NE that addressed the critical role that dual-fuel facilities fulfill in enhancing system reliability (the “Dual-Fuel Report”) (Exh. EFSB-AFP-6).

In the underlying decision, the Company stated that it would seek a permit from MDEP to burn oil as a backup fuel for a maximum of 30 days annually during periods of gas curtailment (up to 720 hours annually). Final Decision at 33. The Company indicated that while it could not predict the exact numbers of days that it would operate on oil in an average year, it expected to use oil for 10 to 20 days in an average year, based on the number of days below 25 degrees Fahrenheit. Final Decision at 22. The Company stated that it based its decision to seek a permit allowing the use of oil as a backup fuel upon a number of factors including: (1) its inability to obtain a 365-day firm gas supply from Algonquin Gas Transmission Company (“Algonquin”); (2) its ability to minimize the air quality impacts of oil; (3) the need for fuel diversity; and (4) the location of the facility in a port area.⁵ Id. at 33-34. In the Final Decision, the Siting Board noted that the air permit Site Edgar proposed to seek from MDEP would allow the facility to burn oil as a backup fuel during periods of gas curtailment for a maximum of 30 days annually, with a restriction limiting its use of oil to periods outside of the summer ozone season. Id. at 38. On

⁵ In the underlying proceeding, the Company provided a copy of its agreement with Algonquin which provides that gas supplies are guaranteed for 335 days. Final Decision at 33.

balance, the Siting Board concluded that the air quality and limited traffic benefits that would be associated with eliminating oil firing would be outweighed by the costs and potential environmental impacts either of obtaining a 365-day supply of natural gas, or of shutting down the proposed facility when gas is unavailable. Id. Consequently, the Siting Board found that Sithe Edgar's proposal to seek a permit to burn oil as a backup fuel during periods of gas curtailment for a maximum of 30 days annually minimized environmental impacts consistent with minimizing the cost of mitigation, control and reduction of such impacts. Id. at 39.

On May 5, 2000, the MDEP issued the Conditional Major Comprehensive Plan Approval/Prevention of Significant Deterioration Permit ("Conditional Air Permit") that allowed the facility to burn up to 29,074,350 gallons of transportation distillate fuel oil that did not exceed 0.05% sulfur content per rolling 12-month period (Exh. PC-AFP-1, at 3).⁶ The Company stated that under the Alternative Fuel Plan, oil operations would be restricted based on actual measured emissions compared to calculated oil firing emission allotments, rather than the limit of 29,074,350 gallons of LSD oil imposed by the MDEP in 2000 (id. at 6). Therefore, the Company explained, the most restrictive pollutant would limit the amount of oil that could be fired; as soon as the first 12-month oil-fired emission limit is reached for a single pollutant, oil firing would cease (id.). On March 20, 2006, MDEP issued a Final Air Permit that incorporated the terms contained in the Alternative Fuel Plan. (Exh. PC-AFP-1, at Att. 2).⁷

The Company asserted that the Alternative Fuel Plan would result in a reduction in air emissions compared to the emissions limits approved by the Siting Board (Exh. PC-AFP-1, at 5). Fore River noted that the use of ULSD oil would decrease sulfur dioxide (SO₂) emissions due to its lower sulfur content (id.). In addition, the Company stated that there will be no increases in any other pollutants and there may well be decreases (id.). Based on the emission limits permitted by MDEP, the "worst case" amount of oil that can be burned in any year is estimated to be two times the 29,074,350 gallon value, or 58,148,700 gallons, which is equivalent to 60 days

⁶ For the facility as originally proposed, the MDEP issued a single approval covering both state and federal requirements. However, on March 3, 2003 Massachusetts returned delegation of federal Prevention of Significant Deterioration ("PSD") review authority to the Environmental Protection Agency ("EPA") (Exh. PC-AFP-1, at 7). Fore River filed a request with the EPA on March 31, 2006 for a modification of its PSD permit consistent with the provisions of the Alternative Fuel Plan (id.). As of September 6, 2006, the EPA had not issued a notice of the permit modification.

⁷ Both the Conditional and Final Air Permits contain a restriction which prohibits oil firing between May 1 and September 30 (the summer ozone season) during each year. The Final Decision relied on this assumption in developing its analysis. The Alternative Fuel Plan does not affect this restriction.

per year full load (Exh. EFSB-AFP-2). This comports with the established limits in tons per year (“tpy”) contained in the Conditional and Final Air Permits issued by MDEP for the following criteria pollutants: oxides of nitrogen (NO_x), SO₂, particulate matter (PM), carbon monoxide (CO) and volatile organic compounds (VOC) (Exh. PC-AFP-1, at 6). The Company stated that under the Alternative Fuel Plan, the emissions of criteria pollutants other than SO₂ will be the same as or/less than the annual emissions approved for use with 29,074,350 gallons of oil (Exh. EFSB-AFP-4).

Fore River explained that in order to maintain the same emission levels (or lower) as approved by the MDEP in the Conditional and Final Air Permits, while burning more oil with a lower sulfur content, the Alternative Fuel Plan relies on improved emission rates associated with the facility equipment (Exhs. EFSB-AFP4; EFSB-AFP-5). With regard to sulfur content, the Company indicated that ULSD was not available in the U.S. market at the time of the BACT analysis for the original air permit (Exh. EFSB-AFP-5). For NO_x, the Final Air Plan Approval permitted an emission rate of 6 parts per million (“ppm”) on oil, however, the actual emission rate from ULSD oil is expected to be in the 3-4 ppm range (Exh. AFP-4). Further, the actual emission rates, versus the permitted emission rates, for CO, VOC and PM-10 are expected to be on the order of 50% or less than the MDEP approved ppm or lb/MMBtu emission rates for pollutants firing on oil (*id.*). The Company explained that the CO and VOC reductions can be realized by a combination of enhanced combustor performance as well as the oxidation catalyst, where the PM-10 is attributable to a combination of enhanced combustor performance and lower sulfur content (*id.*).

Upon request of the Siting Board, the Company provided data which detailed the MDEP allowable oil-fired emission rate, and the anticipated achievable oil-fired emission rates for both LSD and ULSD (Exh. EFSB-AFP-5). Based on these rates, the Company calculated the emissions in tons per year for the three categories – allowed by MDEP for 30 days, anticipated achievable if using LSD for 30 days, and anticipated achievable if using ULSD for 60 days (*see* Table 1, below) (*id.*). The data showed that the anticipated oil-fired emission rates for both LSD and ULSD were lower for all pollutants than what was permitted by MDEP in the Conditional and Final Air Permits (Exh. EFSB-AFP-5). Specifically, while all emission rates were lower than the MDEP permitted rates, two differed depending on whether ULSD or LSD was used; SO₂ and PM-10 were lower under ULSD, while NO_x, VOC and CO had the same emission rate under both ULSD and LSD (*id.*).

TABLE 1

	SO ₂	PM-10	NO _x	CO	VOC
MDEP Allowable Oil-Firing Emission Rate (lb/MMBtu)	0.0522	0.05	0.0233	0.0166	0.0095
LSD - Anticipated Achievable Oil-Fired Emission Rate (lb/MMBtu)	0.05	0.04	0.0117	0.005	0.003
ULSD-Anticipated Achievable Oil-Fired Emission Rate (lb/MMBtu)	0.003	0.02	0.0117	0.005	0.003
MDEP Allowable Oil-Firing Emission Rate (tons-30 days)	103	100	50	96	22
LSD - Anticipated Achievable Oil-Fired Emission Rate (tons-30 days)	98.1	78.5	22.9	9.8	5.9
ULSD-Anticipated Achievable Oil-Fired Emission Rate (tons-60 days)	11.8	78.5	45.7	19.6	11.8

Source: Table EFSB-AFP-5-1

Carbon dioxide (CO₂) is not a criteria pollutant and therefore is not regulated by MDEP, nor addressed in either the Conditional or Final Air Permits; however, the Siting Board does have a CO₂ mitigation requirement. Final Decision at 136-140; Nickel Hill Energy, LLC, 11 DOMSB 83, at 143-144 (2000); Dighton Power Associates, 5 DOMSB 193, at 239-240 (1997). In the underlying decision, Sithe Edgar indicated that the proposed facility would emit a maximum of 2,832,351 tpy of CO₂. Final Decision at 35. Here, the Company indicated that the annual maximum potential CO₂ emissions for the facility under the Alternative Fuel Plan for 60 days full load equivalent oil firing is calculated to be 3,089,455 tpy (Exh. EFSB-AFP-2). Therefore, the Company calculated that under the proposed Alternative Fuel Plan, the maximum CO₂ emissions for the Fore River facility are expected to increase by approximately 9% from the level relied on in the underlying decision (*id.*). In the Final Decision the Siting Board accepted the Company's proposal to offset 1% of the facility's CO₂ emissions using a portion of the CO₂ emission reduction from the Mystic Station Air Quality Improvement Plan. Final Decision at 43. In order to address the additional CO₂ offsets needed by Fore River under the Alternative Fuel Plan, Fore River proposes to conform to the Final Decision by modifying both: (1) the June 2004

Agreement between Mystic and Fore River; and (2) the June 2004 Agreement between Fore River and the Siting Board (id.).

With regard to water use, the Company asserted that the Alternative Fuel Plan would not result in greater water use than the water use plan approved by the Siting Board in the underlying decision (Exh. PC-AFP-1, at 6). The underlying decision relied on water usage numbers where the water usage on oil was projected to be 895,336 gallons per day (“gpd”).⁸ Final Decision at 55. Here, under the Alternative Fuel Plan, the Company calculated that the anticipated water usage while operating on oil would be 381,181 gpd (Exh. EFSB-AFP-7). The Company explained that the oil projections in the Final Decision were conservative and that the actual oil firing water injection to fuel ratio is lower, which equates to 60% less water use when operating on oil than was originally anticipated (id.).⁹ The Company asserted that although the facility would be operating more days on oil under the Alternative Fuel Plan, the actual water use, both daily and in sum, would be less than originally projected in the underlying decision (Exh. PC-AFP-1, at 6).

Finally, with regard to the transportation of oil to the Fore River facility, the Company asserted that the Sprague oil system, which includes unloading, storage and forwarding capabilities is sufficient to accommodate the increased oil use under the Alternative Fuel Plan (Exh. EFSB-AFP-8).¹⁰ The Company explained that while the Final Decision allows the Company to deliver oil on occasion by truck to top off the tanks, that plan is no longer necessary since Sprague is designed to meet the Fore River project’s complete oil delivery needs (id.). However, in the event that the Sprague system is not able to provide sufficient oil to the Fore

⁸ The water usage on gas was projected to be approximately 46,214 gpd to 129,690 gpd. Final Decision at 44.

⁹ The original water use numbers were based on data from Siemens-Westinghouse, the originally proposed manufacturer of the combustion turbine (Exh. EFSB-AFP-7). The turbines installed in the Fore River facility are manufactured by Mitsubishi Heavy Industries (id.).

¹⁰ In the Final Decision the Company stated that the primary means of distillate oil delivery would be ocean-going tank barges that would hold a maximum of four million gallons of oil at full load operation. Final Decision at 95. In addition, the Company indicated that while oil delivery would be primarily by barge, it may at times elect to deliver oil via truck to top off the oil storage tank. Id. at 111. On August 24, 2000, the Company filed a project change to eliminate oil delivery by barge to the Fore River facility. On September 25, 2000, the Siting Board approved the Company’s proposal to have oil barged and stored at the Sprague Energy Corporation Marine Terminal located across the Fore River and then transported to the Fore River generating facility via a new pipeline constructed by the Company through an existing utility tunnel under the Fore River (August 24, 2000 Filing at 1 and 2). The new pipeline was tested on July 20, 2001 (Exh. EFSB-AFP-8).

River facility and truck delivery would be necessary, the worst-case scenario would be 95 truck deliveries per day (id.).¹¹ In the underlying decision, the Siting Board directed the Company to minimize traffic impacts associated with any potential oil deliveries made by truck by avoiding peak hour oil delivery. Final Decision at 113.

B. Analysis and Findings

The Company has provided information regarding expected operation of the Fore River facility and associated air emissions and water requirements under the Alternative Fuel Plan, and compared the expected impacts to the corresponding impact amounts set forth in the Final Decision and the air emission limits set by MDEP under the Conditional and Final Air Permits for the project. The information provided supports the Company's assertion that annual air emissions (in tons) as well as air emission rates (in lbs per MMBtu) under the Alternative Fuel Plan would be held to the pre-existing limits permitted by MDEP – maximum amounts that also match those which provided the basis for the Siting Board's analysis in the Final Decision. Similarly, the information provided supports the Company's assertion that water use under the Alternative Fuel Plan would be less than indicated in the Final Decision, both on a maximum daily and annual basis.

The Siting Board notes, however, that in addition to the above-mentioned comparisons to maximum amounts of air emissions and water use set forth in the Final Decision and other applicable permits, comparison of the expected facility emissions and water use under the Alternative Fuel Plan to the actual or currently achievable levels without the project change also is important for our review. The Company has acknowledged that the use of ULSD in lieu of LSD would actually reduce emission rates (in lbs per MMBtu) for only two of the criteria pollutants subject to MDEP limits, SO₂ and PM-10. The emission rates of other criteria pollutants subject to MDEP limits, including NO_x, VOC and CO, would be unchanged with use of ULSD. Similarly, the facility's CO₂ emission rate and rate of water use – not subject to limits set by MDEP – would be unchanged with use of ULSD.

In the case of the MDEP-limited air pollutants, the Company explained that for those pollutants unaffected by the choice of fuel oil, i.e., besides SO₂ and PM-10, the flexibility to increase operations on oil to more than 30 days, while remaining within the permitted annual limits (tpy) from oil-fired operations, may well depend on the actual or currently achievable emission rates for these pollutants already being below the permitted limits. Further, the

¹¹ In the underlying decision, the Company indicated that the worst case scenario would be 100 truck trips per day. Final Decision at 111.

Company's analysis has confirmed that such differences between the permitted emission rates and the actual or currently achievable emission rates in fact exist. Therefore, the Siting Board further evaluates the project change with respect to its effect on air emissions, compared to both the permitted emission levels and the actual or currently achievable emission levels from the facility.

As mentioned, the use of ULSD in lieu of LSD consistent with the Alternative Fuel Plan would result in actual reductions in SO₂ and PM-10 emission rates. Compared to currently achievable emissions based on use of LSD, the proposed use of ULSD would reduce emission rates by 94% for SO₂ and 50% for PM-10. Further, compared to pre-existing limits set by MDEP for oil-fired operation, emission rates with use of ULSD would be lower than the maximum permitted levels by 94% for SO₂ and 60% for PM-10. See Table 2, cols. 2, 3 and 4.

Thus, assuming some periods of oil-fired operation with or without the proposed project change, the use of ULSD in lieu of LSD during such periods would significantly reduce the rate of contribution of SO₂ and PM-10 from the facility to ambient air quality. Specifically, the rates of contribution to ambient air quality would be below currently achievable levels with use of LSD, as well as below the levels corresponding to previously permitted oil-fired emission rates. Such reductions potentially would improve air quality in the project area during oil-fired operations, as may be determined for short-term averaging periods MDEP uses to predict or monitor air quality.¹²

However, as indicated in the Alternative Fuel Plan, the facility may operate on oil for additional days over 30 days, an option not considered by the Siting Board in the underlying decision. Assuming dispatch and operation of the facility remain the same in all other respects, the project change thus would result in use of oil in lieu of gas on any such additional days of oil-fired operation. Based on maximum permitted emission rates applicable to operation on gas, oil-fired operation would entail higher air emissions than gas-fired operation for all criteria pollutants, even with use of ULSD. See Table 2, cols. 1 and 4.

¹² MDEP uses average concentrations over 24-hour and 3-hour periods for SO₂, and over 24-hour periods for PM-10. Final Decision at 153.

TABLE 2

lb/MMBtu	Gas Permitted	Oil Permitted	Actual LSD	Actual ULSD
SO ₂	0.0023	0.0522	0.05	0.003
PM-10	0.011	0.05	0.04	0.02
NO _x	0.0074	0.0233	0.0177	0.0177
CO	0.0045	0.0166	0.005	0.005
VOC	0.0013/0.0022 unfired/duct-fired	0.0095	0.003	0.003

Source: Table EFSB-AFP-5-1; Exh. EFSB-PC-AFP-1, Att. 2.

Therefore, for all criteria pollutants, the possible substitution of oil-fired operation for gas-fired operation consistent with the Alternative Fuel Plan would have the potential to increase annual emissions from combined oil-fired and gas-fired operations. In the case of criteria pollutants for which emissions are the same with use of LSD and ULSD, including NO_x, VOC and CO, substitution of oil-fired operation for gas-fired operation on at least some days of the year (i.e., corresponding to any additional days of oil-fired operation beyond the previously allowed limit of 30 days), with other operating parameters remaining unchanged, would result in a clear increase in annual emissions.

In the case of criteria pollutants for which air emissions are lower with use of ULSD in lieu of LSD, including SO₂ and PM-10, implementation of the Alternative Fuel Plan would result in a lowering of annual emissions to the extent operation on ULSD is substituted for operation on LSD, but an offsetting raising of annual emissions to the extent oil-fired operation is substituted for gas-fired operation. The Siting Board notes that, for two reasons, the specific net effect of these offsetting changes on expected annual emissions of SO₂ and PM-10 cannot be determined based on this record. First, expected actual or currently achievable emissions from gas-fired operation, as opposed to maximum permitted emissions, have not been identified.¹³ Second, it is

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The “gas permitted” emission rates in Table 2 represent the maximum allowable emissions during gas-fired operation based on the Final Air Permit, which may be greater than the actual or currently achievable emissions. As with the identified achievable emission rates for oil-fired operation, it is reasonable to expect that due to improved facility operation and conservative permitting assumptions, the actual or currently achievable emission rates for gas-fired operation are also lower than the MDEP permitted (continued...)

unclear whether oil-fired operation under the Alternative Fuel Plan would include use of ULSD only, or include use of LSD for some period of oil-fired operation because ULSD is not available during that period.¹⁴

Annual emissions thus would increase as a result of the project change for three of the criteria pollutants, and may increase or decrease for the remaining two pollutants; however, as mentioned, none of the previously set MDEP emission limits for these pollutants would either be changed or exceeded. The Siting Board also notes that two of the three pollutants that are expected to show clear annual increases, NO_x and VOC, are of concern primarily as pre-cursors of ozone conditions, especially during warmer summer periods when ozone levels are highest. All oil-fired operation and thus any increase in annual emissions attributable to such operation would be limited to outside the ozone season, minimizing the significance of the additional annual emissions for those pollutants.

In the case of CO₂, which is not subject to MDEP limits, the record shows annual emissions would increase by 9% under the Alternative Fuel Plan, based on the Company's assumption of a maximum of 60 days of oil-fired operation. The Company will provide CO₂ offsets consistent with the Siting Board's mitigation requirements. While such offsets then would increase proportionately, so would the remaining amount of annual emissions net of this required offset amount. Therefore, the Siting Board directs Fore River to submit by November 1, 2006 modified agreements between Mystic and Fore River; and between Fore River and the Siting Board that incorporate the additional CO₂ offsets needed by Fore River under the Alternative Fuel Plan..

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(...continued)

rates. Therefore, Table 2 may overstate any apparent benefits of burning ULSD over gas and understate the benefits of burning gas over ULSD.

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Assuming ULSD is substituted for LSD in all oil-fired operation under the Alternative Fuel Plan, the record does provide sufficient information to show that based on a maximum of 60 days of such operation with no other changes in dispatch or operation of the facility, the removal of the 30-day limit on oil-fired operation would result in no increase in maximum annual emissions for either SO₂ or PM-10, even if emissions from the displaced gas-fired operation would have been zero. In the case of SO₂, annual emissions would be lower because the emission rate with use of ULSD would be less than half that which would have occurred with use of LSD, while the maximum duration of oil-fired operation over the year would at most be double that which previously would have been allowable. For PM-10, annual emissions would be either the same or lower because the emission rate with use of ULSD would be exactly half that with use of LSD, while again the maximum duration of allowable oil-fired operation would be no more than double.

In the case of water use, the daily requirements for oil-fired operation would be the same regardless of implementation of the Alternative Fuel Plan, amounting to 381,181 gpd with use of ULSD or LSD. To the extent oil-fired operation is substituted for gas-fired operation, the rate of water use during such operation would be several times the level required to operate on gas which is 46,214 gpd to 129,690 gpd. Based on the Company's assumption of a maximum of 60 days of oil-fired operation, the maximum annual water use would increase by approximately 14% to 37 % under the Alternative Fuel Plan.¹⁵

Similar to the criteria air pollutants discussed above, however, maximum facility water use under the Alternative Fuel Plan would remain lower than the expected levels in the underlying decision, which were based on a usage rate of 895,336 gpd. The difference reflects a lower actual or currently achievable ratio of water to fuel oil injection attributable to an earlier change in turbine vendors, not the proposed use of ULSD or any other provision of the Alternative Fuel Plan. The Siting Board also notes that to the extent water use actually would be higher than currently achievable levels, as a result of the project change, the increases in water use would occur outside seasonal drought periods in summer and early fall.

With regard to the transportation of oil to the Fore River facility, the implementation of the Alternative Fuel plan does not affect the reliability of the Sprague oil delivery system to be used for the facility, previously approved by the Siting Board. In addition, the Company no longer intends to use delivery of oil by truck as a component of the Fore River oil transportation plan.

Overall, the project change would result in changes in environmental impacts with respect to air quality and water use. With the exception of CO₂, all expected air quality and water use impacts with the proposed project change would remain within maximum levels identified in the Final Decision, as well as all previously set MDEP emission limits for the criteria air pollutants. In the case of CO₂, maximum annual emissions would be greater than previously approved, and the Company would provide additional CO₂ offsets for the added amount of such emissions consistent with the Siting Board's offset requirement.

Compared to actual or currently achievable level of impacts from oil firing at the facility, effects of the project change would be mixed, including a number of both increases and decreases in impacts as described above. Maximum emissions of SO₂ and PM-10 for short-term periods, expected when the facility operates on oil, would be substantially lower based on the proposed

¹⁵ For 60 days on oil the average annual water use at gpd could potentially be: $(46,214 \text{ to } 129,690 * 305) + (381,181 * 60) / 365 = 101,277 \text{ gpd to } 171,031 \text{ gpd}$; for 30 days on oil the average annual water use at gpd would be: $(46,214 \text{ to } 129,690 * 335) + (381,181 * 30) / 365 = 73,746 \text{ gpd to } 150,360 \text{ gpd}$.

substitution of ULSD for LSD when ULSD is available. At the same time, annual air emissions would be higher for NO_x, VOC and CO, as well as for CO₂, and would be higher or lower for SO₂ and PM-10, based on the proposed removal of the 30-day limit for oil-fired operation and assuming the facility actually operates on oil for over that limit up to as much as 60 days. Annual water use also would be higher with additional days of oil-fired operation.

As itemized above, the environmental indicators that show potential increases in impact as a result of the project change appear to outnumber those that show potential decreases. In addition, the proposed use of ULSD – on which the potential decreases in environmental impacts depend – is to be on an as-available basis. We note however, that as perhaps the most significant changes in expected impact, the proposed use of ULSD if available indeed would result in substantially lower maximum rates of SO₂ and PM-10 emissions. In addition, the proposed emissions of NO_x and VOC, while higher on an annual basis assuming added days of oil-fired operation, would reflect increases actually occurring only outside the ozone season. Similarly, increases in water use with added days of oil-fired operation would occur outside seasonal drought periods. Thus, the proposed project change has the potential to provide environmental benefits that fully balance its adverse impacts.

Accordingly, the Siting Board finds that the project change likely would result in mixed changes in environmental impacts, including both increases and decreases in various air quality and water use impacts, and at the same time would result in modified environmental impact levels that largely would be consistent with maximum levels and constraints identified in the Final Decision.

In addition, based on the information in the Dual-Fuel Report, the project change would provide enhanced access to a diverse source of fuel to meet the region's needs for reliable and low cost energy. The Dual-Fuel Report sets forth the importance of increasing the generating capacity that can be operated on oil when gas supplies are constrained. Based on information provided by the Company, the project change would provide it with greater flexibility to operate on oil, and therefore may allow the plant to be dispatched more often when gas supplies are constrained or high priced. The Siting Board therefore finds that the project change has the potential to result in a more reliable energy supply, and a more diverse energy supply, for Massachusetts and the region.

On balance, the Siting Board concludes that any air quality and water impacts that would be associated with the Alternative Fuel Plan would be outweighed by the likely reliability and diversity benefits of implementing the Alternative Fuel Plan.

The Siting Board notes that the request of Fore River regarding the substitution of ULSD oil for LSD oil, and the associated increase in days on oil backup, is an issue that has not been

previously addressed by the Siting Board. Our analysis has shown that, while the Company's request is based in part on use of ULSD, the availability of this less polluting fuel is not entirely certain. In addition, given the complexity of the regional electricity market, the actual extent of necessary operation on oil is uncertain. The Siting Board therefore considers it important to develop a broad-based understanding of actual operation of dual fuel capability achievable with the Alternative Fuel Plan, and its effect on system reliability and fuel diversity. Therefore, the Siting Board directs the Company to submit an annual report for three years, starting on June 1, 2007, that documents for the preceding twelve months: (1) the number of days that the Fore River facility has run on oil, broken out by ULSD and LSD if applicable; and (2) the number of days that Fore River has run on gas. Each annual report should also include a narrative describing any constraints to operating on gas and oil, such as cost considerations, equipment/operating problems, supply availability, and /or transportation interruptions.

Accordingly, the Siting Board finds that, with the implementation of the above conditions, the environmental impacts of the proposed facility would be minimized.

The Siting Board further finds that, upon compliance with the above conditions, the Company's plans for implementation of the Alternative Fuel Plan would minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility.

III. DECISION

Consistent with the Siting Board's directive to Fore River to inform the Siting Board of any changes to Fore River's proposed project, other than minor variations, Fore River has informed the Siting Board of one such change – a change in the number of days that oil can be burned as a back-up fuel and the sulfur content of the oil that would be burned.

The Siting Board found that further inquiry was warranted to evaluate whether additional mitigation is required regarding potential increases in environmental impacts, and to determine whether a re-balancing of such impacts with reliability and diversity of supply is needed. After conducting such inquiry above, the Siting Board found that, with the implementation of the following Conditions U and V, the environmental impacts of the proposed facility would be minimized.

Condition U

The Siting Board directs Fore River to submit by November 1, 2006 modified agreements between Mystic and Fore River; and between Fore River and the Siting Board that incorporate the additional CO₂ offsets needed by Fore River under the Alternative Fuel Plan.

Condition V

The Siting Board directs the Company to submit an annual report for three years, starting on June 1, 2007, that documents for the preceding twelve months: (1) the number of days that the Fore River facility has run on oil, broken out by ULSD and LSD if applicable; and (2) the number of days that Fore River has run on gas. Each annual report should also include a narrative describing any constraints to operating on gas and oil, such as cost considerations, equipment/operating problems, supply availability, and /or transportation interruptions.

Accordingly, the Siting Board finds that, upon compliance with Conditions U and V, as set forth in Section II.B, above, the Company's plans for implementation of the Alternative Fuel Plan would minimize the environmental impacts of the proposed facility consistent with the minimization of costs associated with the mitigation, control, and reduction of the environmental impacts of the proposed generating facility.

Findings in this decision are based upon the project change information provided by the Company examined in light of findings the Siting Board made in the Final Decision. Since the project changes outlined in this decision pertain to the facility approved by the Siting Board in the underlying proceedings, the Company must construct and operate its facility in conformance with its proposal presented in the underlying proceeding and in earlier compliance and project change filings; the only additional modifications permitted are those set forth in this decision.

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.

Dated this 18th day of September, 2006

Selma Urman
Presiding Officer

APPROVED by the Energy Facilities Siting Board at its meeting of September 18, 2006, by the members and designees present and voting: Judith F. Judson (Chairman, DTE/EFSB), David L. O'Connor (Commissioner, Division of Energy Resources); Philip Griffiths, (for Robert W. Golledge, Jr. (Secretary of Environmental Affairs); and Enrique Perez (for Ranch Kimball, Secretary of Economic Development).

Judith F. Judson, Chairman
Energy Facilities Siting Board

Dated this 18th day of September, 2006

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).