D.T.E. 04-10

Petition of Nantucket Electric Company for a determination by the Department of Telecommunications and Energy, under the provisions of G.L. c. 164, § 72, that a proposed 33-mile underground and submarine 46 kV distribution line from Barnstable to Nantucket is necessary and will serve the public convenience and is consistent with the public interest.

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I. INTRODUCTION

On February 17, 2004, Nantucket Electric Company ("Nantucket Electric" or "Company")[1] filed a petition with the Department of Telecommunications and Energy ("Department") pursuant to G.L. c. 164, § 72, seeking authority from the Department to construct, maintain, and operate an underground and submarine line for the transmission of electricity at 46 kilovolts ("kV"), beginning in Barnstable at a proposed substation to be located at the intersection of Industrial Boulevard and Merchants Way (Exh. NEC-1). The underground portion of the route would follow Merchants Way and Kidd's Hill Road, cross Independence Road, then enter and traverse Barnstable Municipal Airport. Exiting the airport, the route would cross Route 28 east of the Hyannis Rotary, follow Ridgewood Avenue, Center Street, Old Colony Road, and Ocean Street, terminating on Kalmus Beach. The submarine portion of the route would begin at Kalmus Beach and traverse Hyannis Harbor. The route would extend into and across Nantucket Sound to the west of Bishop and Clerks rocks and shoals area, including waters within the Town of Yarmouth offshore boundaries, and make landfall on the Island of Nantucket at the end of Jefferson Avenue, then follow, underground, Jefferson Avenue, North Beach Street, South Beach Street, Oak Street, and Easy Street, terminating at the existing Candle Street Substation. The Company seeks a determination by the Department that the proposed electric transmission line is necessary and will serve the public convenience and be consistent with the public interest (id.). The petition was docketed as D.T.E. 04-10.

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[1] Nantucket Electric is a Massachusetts corporation authorized to transmit, purchase, sell, and distribute electricity as described in G.L. c. 164 (Exh. NEC-1, at 1).

On April 29 and May 10, 2004, after notice duly issued, the Department conducted public hearings in Barnstable and Nantucket, respectively. Stephen Tise, Jr. and Sandra Tise ("Joint Intervenors") filed a timely joint petition to intervene that was granted by the Hearing Officer on June 23, 2004. Cape Wind Associates, LLC filed a timely motion for limited participant status, also granted on June 23, 2004. In support of its petition, the Company submitted 10 exhibits, which included the testimony of: David Fredericks, Vice President of Nantucket Electric; Joseph Paul Carey, Lead Senior Engineer, Distribution Planning and Engineering Department of Massachusetts Electric Company; David M. Campilii, Principal Engineer, Transmission and Distribution Services, Underground Engineering, National Grid USA Service Company; F. Paul Richards, Principal Environmental Engineer in the Environmental Group of National Grid USA Service Company; and Dr. Peter Valberg, Principal and Senior Scientist, Gradient Corporation. The Company also responded to 55 Department information requests and 13 record requests. Evidentiary hearings were held on September 13 and 15, 2004.

II. STANDARD OF REVIEW

G.L. c. 164, § 72, requires, in relevant part, that an electric company seeking approval to construct a transmission line must file with the Department a petition for:

> authority to construct and use … a line for the transmission of electricity for distribution in some definite area or for supplying electricity to itself or to another electric company or to a municipal lighting plant for distribution and sale … and shall represent that such line will or does serve the public convenience and is consistent with the public interest …. The [D]epartment, after notice and a public hearing in one or more of the towns affected, may determine that said line is necessary for the purpose alleged, and will serve the

public convenience and is consistent with the public interest.[2]

The Department, in making a determination under G.L. c. 164, § 72, is to consider all aspects of the public interest. Boston Edison Company v. Town of Sudbury, 356 Mass. 406, 419 (1969). Section 72, for example, permits the Department to prescribe reasonable conditions for the protection of the public safety. Id. at 419-420. All factors affecting any phase of the public interest and public convenience must be weighed fairly by the Department in a determination under G.L. c. 164, § 72. Town of Sudbury v. Department of Public Utilities, 343 Mass. 428, 430 (1962).

In evaluating petitions filed under G.L. c. 164, § 72, the Department examines: (1) the need for, or public benefits of, the present or proposed use (see Massachusetts Electric Company, D.P.U. 93-29/30, at 10-14, 22-23 (1995); New England Power Company, D.P.U. 92-278/279/280, at 19-22 (1994) ("NEPCo, D.P.U. 92-278/279/280"); Tennessee Gas Pipeline Company, D.P.U. 85-207, at 6-9 (1986) ("Tennessee")); (2) the environmental impacts or any other impacts of the present or proposed use (see NEPCo, D.P.U. 92-278/279/280, at 20-23; New England Power Company, D.P.U. 92-270, at 17-20 (1994) ("NEPCo, D.P.U. 92-270"); Tennessee, at 20-25); and (3) the present or proposed use and any alternatives identified (see NEPCo, D.P.U. 92-278/279/280, at 19; NEPCo, D.P.U. 92-270, at 17; Tennessee, at 18-20). The Department then balances the interests of the general public against the local interests and determines whether the line is necessary for the purpose

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[2] Pursuant to G.L. c. 164, § 72, the electric company must file with its petition a general description of the transmission line, a map or plan showing its general location, an estimate showing in reasonable detail the cost of the line, and such additional maps and information as the Department requires.

alleged and will serve the public convenience and is consistent with the public interest.[3]

III. DESCRIPTION

A. Overview

Nantucket Electric proposes to construct, maintain, and operate a new 46 kV underground and submarine cable and ancillary equipment for the distribution of electricity to serve customers on the Island of Nantucket (Exhs. NEC-1; FPR-1, Att. 1, at A-4). The new line, approximately 33 miles long, would extend from a proposed substation in Barnstable, Massachusetts and terminate at the Company's Candle Street substation in Nantucket, Massachusetts (Exhs. NEC-1; FPR-1, Att. 1, at A-4, A-13).

The new line would consist of one submarine and two land segments (Exh. FPR-1, Att. 1, at A-4). The submarine segment would traverse Nantucket Sound to connect with the land segments at either end (id. at A-4, A-8). The land segments would stretch underground 23,000 and 7,000 feet in Barnstable and Nantucket, respectively (id. at A-8). A fiber optic communications cable would be laid along with the new 46 kV line (id. at A-4).

A new substation would be constructed in the Hyannis Industrial Park in Barnstable adjacent to the existing 115 kV transmission lines owned by NSTAR Electric ("NSTAR")

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[3] In addition, the Massachusetts Environmental Policy Act ("MEPA") provides that "[a]ny determination made by an agency of the commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact" ("Section 61 findings"). G.L. c. 30, § 61. Pursuant to 301 CMR 11.12(5), these findings are required if the Secretary of Environmental Affairs has required an Environmental Impact Report ("EIR") for the project. The Company informed the Department that no EIR is required for the proposed project (Tr. 1, at 122-123). Accordingly, Section 61 findings are not necessary in this case.

(Exh. NEC-1, at A-4).[4] The underground cable would be installed in an 8-inch steel pipe, approximately three feet in depth (id. at A-8). The Nantucket land segment would be constructed within roadways and would terminate at Nantucket Electric's existing Candle Street Substation (id. at A-4, A-13).

Nantucket Electric anticipates installing the transmission line in order to meet projected increased demand for electricity on Nantucket (Exh. DF-1, at 6). The proposed project would, in addition, increase reliability by providing the island with a redundant electric power supply (Exh. JPC-1, at 11).

We summarize below the evidence presented by Nantucket Electric regarding the need for the transmission line, project alternatives, and impacts of the proposed project.

B. Need for the Proposed Project

Nantucket Electric asserted that the proposed 46 kV underground and submarine cable is needed to supply increased demand for electric power on Nantucket (id. at A-3). The Company stated that Nantucket population grew 1.9 percent per year on average between 1985 and 1993, while electrical demand grew an average of 3.7 percent per year (id.; Exhs. DTE-G-

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[4] Nantucket Electric indicated that, in conjunction with the interconnection of the proposed project to elements of the existing transmission system operated by NSTAR on Cape Cod, NSTAR would make improvements to its system (Tr. 1, at 105-106). Among these improvements, NSTAR would construct a 115 kV tap line extending approximately 0.76 mile from Nantucket Electric's proposed substation in Barnstable to NSTAR's existing Barnstable switching station (id. at 103-105). The Company indicated that NSTAR would separately seek G.L. c. 164, § 72 approval for improvements to its system (id. at 106). The Company further indicated that if permitting or other cause were to delay completion of NSTAR's system improvements, then NSTAR would allow the Company, on a temporary basis, to energize its cable and serve load by tapping into NSTAR's existing 115 kV line (id. at 106-107).

2; DTE-G-3). The Company stated that, by contrast, average annual growth in population and demand for electricity on Nantucket from 1993 to 2001 were 5.1 and 5.7 percent, respectively (Exhs. FPR-1, Att. 1, at A-4; DTE-G-2; DTE-G-3; DTE-G-5). The Company indicated that electric demand on Nantucket during this period had markedly outstripped the Company's load growth forecast (Exh. FPR-1, Att. 1, at A-4). The Company noted that its load growth forecast relied on methods then approved by the Department of Telecommunications and Energy (previously the Department of Public Utilities) (id.). The Company attributed the surge in Nantucket electric power demand to the increase in population on the island and an associated jump in residential construction (Exh. DF-1, at 4). The Company indicated that the latest load forecast for Nantucket, part of National Grid's 2003 Power Supply Area ("PSA") Forecast, called for strong load growth to continue (id. at 5). The PSA Forecast projects that Nantucket load would reach 35 MW (the maximum rating of the existing transmission line serving Nantucket) by summer 2005, despite the Company's efforts to reduce Nantucket energy demand (id.; Tr. 1, at 67-68). With respect to these efforts, the Company submitted documentation as to the nature and effectiveness of the demand side management ("DSM") programs established by the Company for Nantucket Electric customers (Exhs. DTE-G-4; NEC-RR-1).

C. The Proposed Project and Alternatives

The Company indicated that it considered three plans to address the anticipated demand for electric power on Nantucket Island. Plan I, the Company's preferred plan, would address Nantucket's anticipated electric power demand with:

* installation of the proposed 46 kV underground and submarine electric power cable

and fiber optic communications cable;

* construction of a new substation with a 115 kV to 46 kV transformer, reactor bays, circuit breakers, cable termination structure, buswork, and a control house adjacent to three existing NSTAR 115 kV transmission lines in Barnstable; and

* addition of new equipment, including circuit breakers, a cable termination structure, firewall and buswork, to the Company's existing Candle Street substation on Nantucket.[5]

Plan I would also require improvements to NSTAR's existing system on Cape Cod, including the construction of a new 115 kV connection line extending along the existing NSTAR right-of-way from the Barnstable switching station to the proposed substation.

The Company indicated that Nantucket Electric's new and existing transmission lines would have a combined delivery rating of 70 MW, adequate to meet forecasted peak demand on Nantucket until 2032 (Exh. DF-1, at 5). The Company also stated that the addition of a second transmission cable to Nantucket would reduce line losses on the transmission system serving Nantucket (Exh. DTE-G-9).[6]

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[5] Only the construction of the proposed transmission line requires Department approval pursuant to G.L. c. 164, § 72.

[6] The Company explained that electrical losses (I^2r) are the mathematical product of system impedance and the value of the current squared (Exh. DTE-G-9). Since electrical losses vary with the square of the current, reducing the current to ½ results in a reduction in losses to ¼ of the original value (id.). Hence, by splitting the current between the two cable systems of approximately equal impedance, each cable system would have electrical losses of approximately ¼ the value of the same current magnitude on one cable (id.). Therefore, the losses for two cables would be approximately ½ the value of the same load served by one cable (id.).

The Company considered two alternatives to Plan I (Exh. FPR-1, Att. A at A-21).[7] Plan II would use DSM programs to reduce electric demand on Nantucket (id.). The Company indicated that because it had only five large commercial accounts on Nantucket, the effectiveness of reducing electric demand on Nantucket with DSM would likely be limited (id.).[8, 9] The Company explained that DSM programs are most effective with large commercial or industrial customers that use large amounts of energy (Exhs. FPR-1, Att. A at A-21; NEC-RR-1, Atts. A, B).

Plan III, the Company's second alternative approach to addressing Nantucket electric demand, would use existing diesel and new facilities to generate power on the island (Exh. FPR-1, Att. A at A-21). The Company indicated, however, that generating power on Nantucket to meet electric demand on the island would present several undesirable consequences (id.; Exh. DF-6). One of these would be a likely reduction in air quality benefits gained when, after the Company's installation of its first submarine cable between Cape Cod

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7 The Company also discussed the possibility of using renewable energy, including biomass, landfill gas, and wind energy, for electric power generation (Exh. FPR-1, Att. A at A-22). The Company indicated that the variability of wind energy made it an unreliable option for meeting the identified need for energy on Nantucket (id.). The Company further stated that a study prepared for the Massachusetts Division of Energy Resources indicated that biomass and landfill gas could not generate energy in sufficient quantities to meet the identified need on Nantucket (id.).

8 The Company indicated that it served primarily residential and small/medium commercial establishments (Exhs. FPR-1, Att. A at A-21; NEC-RR-1).

9 The Company noted that two of its large commercial accounts had recently participated in the Company's DSM Municipal Program, but the resulting reduction in electric demand was only at the 0.1 MW level (Exhs. FPR-1, Att. A at A-21; NEC-RR-1, Att. B).

and Nantucket, the Company decommissioned its existing diesel power plant on the island (Exhs. FPR-1, Att. A at A-21; DF-6). The Company further indicated that, although on-island and roll-on units are maintained by the Company for back up and contingency power generation, existing permits limit the use of such units to emergency, scheduled maintenance, and limited peak shaving (Exh. FPR-1, Att. A at A-21; Tr. 1, at 40). The Company stated that, in addition to air quality concerns, new generation would pose concerns related to plant site selection, fuel transportation and storage, and increased cost (Exh. FPR-1, Att. A at A-22).[10, 11]

D. Impacts of the Proposed Project

1. Wetlands and Endangered Species

The Company indicated that, for the most part, land-based segments of the proposed transmission cable outside areas of land-to-sea transition and landfall sites would avoid direct impacts to wetland resources (Exh. FPR-1, at 4). The Company stated that wetland resource impacts were unlikely because the Company would install the proposed land-based cable segments in existing roadways and areas of existing disturbance (id.; Exhs. FPR-1, Att. at A-42; DTE-L-5).[12, 13] The Company anticipated that the proposed project would traverse buffer

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10 The Company estimated that capital (and operations) outlay for on-island generation would exceed that of a second submarine cable by 25 percent (Exh. FPR-1, Att. A at A-22).

11 The Company also noted that after the Restructuring Act of 1997 it had reconfigured itself as a "wires company" and therefore no longer operated as a power generator (Exh. FPR-1, Att. A at A-22).

12 Areas of existing disturbance are within the confines of Barnstable Airport (Exh. FPR-1, Att. A at A-42). The Company indicated that Barnstable Airport personnel managed wetlands to meet Federal Aviation Authority ("FAA") standards and, as applicable, the

(continued…)

zones of inland wetland resources and that the Company would institute an erosion and sediment control program to reduce the risk of impacts to wetland resource areas during project construction (Exhs. FPR-1, Att. at A-42; DTE-L-5; Tr. 1, at 75).

The Company indicated that its compliance with the Massachusetts Stormwater Management Policy and requirements of the National Pollutant Discharge Elimination System ("NPDES") General Permit for Storm Water Discharges would afford further protection to wetland resources in the vicinity of the land-based segments of the proposed project (id.). The Company also noted that it had filed Notices of Intent with the Conservation Commissions of Yarmouth, Barnstable, and Nantucket (Exhs. NEC-RR-6; NEC-RR-6, Atts. A, B, C, D). The Company anticipated that the Barnstable and Nantucket Conservation Commissions would require the Company to use specific construction and erosion control procedures to guard against adverse impacts to wetlands from the proposed project (Exhs. NEC-RR-6, Att. E, F; FPR-1, Att. A-42).

The Company stated that it anticipated no impacts to endangered, threatened, or rare species as a result of the proposed project (Exh. FPR-1, Att. at A-44; Tr. 1, at 15, 123, 127). The Company based its statement on meetings and correspondence with staff from the U.S.

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[12](…continued)
Barnstable Wetland Bylaw (id.).

[13] Nantucket Electric noted that the proposed transmission line might cross Snows Creek, a culverted tidal creek passing under Ocean Street (and between Hyannis Inner and Outer Harbors) (Exh. FPR-1, Att. A at A-42). In this event, the Company anticipated installing its proposed transmission line above the existing culvert to avoid wetland impacts (id.). The Company stated that, if necessary, it would replace the culvert during construction of its proposed transmission line to avoid impacts to wetlands (id.).

Fish and Wildlife Service ("USFWS"), the U.S. Army Corps of Engineers ("USACE"), the National Marine Fisheries Service ("NMFS"), the Natural Heritage and Endangered Species Program ("NHESP") of the Massachusetts Division of Fisheries and Wildlife ("MA DFW") and the Nantucket Conservation Foundation ("NCF") (Exh. DTE-SS-6).[14]

2. Coastal Resources

The Company indicated that near both the Barnstable and Nantucket landfalls, the proposed project would cross coastal beach/tidal flats and dunes, land subject to coastal storm flow, coastal wetlands/saltmarsh, areas of shellfish resources, and areas of submerged aquatic vegetation (*viz*, eelgrass) (Exhs. DTE-L-4; DTE-L-6; FPR-1, Att. at A-38 to A-43). The Company proposed to use horizontal directional drilling ("HDD") to effect the land-sea interface at either end of its proposed transmission line water crossing in order to avoid impacts to beaches, tidal flats, and land subject to coastal storm flow (Exh. DTE-L-2; Tr. 1, at 88-99; Tr. 2, at 180-194). The Company also stated that it would use a jet plow to install the submarine cable segment of the proposed project, resulting in only temporary disturbances to Nantucket Sound bottom sediments, confined, for the most part, to a three-foot-wide trench (Exh. FPR-1, Att. at A-54; Tr. 2, at 194-210).[15] The Company explained that impacts to Nantucket Sound bottom sediments would likely be temporary because sediments liquified as

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[14] The Company stated that it was awaiting comments from the USACE (Exh. DTE-RR-8).

[15] The Company indicated that some sedimentation would probably occur outside the trench, adjacent to construction activities (Exh. FPR-1, Att. at A-43).

the jet plow advanced would resettle in the trench after the jet plow passed (Exh. FPR-1, Att. at A-54; Tr. 2, at 194-210).

The Company stated that it would conduct a baseline oceanographic survey along the proposed route (Exh. FPR-1, Att. at A-55). The Company indicated it would use the oceanographic survey to identify the size and location of shellfish and eelgrass resources disturbed by installation of the proposed submarine cable (Exh. DTE-W-3; Tr. 2, at 194-210). The Company also indicated that responsibility for determining mitigation of impacts to these resources would lie with the Conservation Commissions with oversight for the affected shellfish and eelgrass resource areas (Exh. FPR-1, Att. at A-43; Tr. 2, at 194-210). The Company stated that it would arrange to implement any required mitigation through the Conservation Commissions (Exhs. FPR-1, Att. at A-55; NEC-RR-6, Att. A, B, C, D, E, F, G; Tr. 2, at 194-210).

After consulting with NMFS staff, the Company identified six marine species[16] that are protected under federal and state endangered species acts or the Marine Mammals Protection Act, and that might occur in the area of the proposed project (Exhs. FPR-1, Att. at A-47; DTE-SS-6). The Company indicated that the identified species were able and likely to stay clear of work on the proposed submarine cable segment (id.). The Company anticipated that, for this reason, combined with the rate and likely timing of construction, and the localized nature of construction-related disturbances, the proposed project likely would have no adverse

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[16] The six species identified by the Company included the harbor porpoise (Phocoena phocoena), harbor seal (Phoca vitulina), grey seal (Halichoerus grypus), harp seal (Phoca groenlandica), hooded seal (Crystophora cristata), and ringed seal (Phoca hispida) (Exh. FPR-1, Att. at A-47).

impact on protected marine species (id.).

The Company also examined Nantucket Sound fisheries resources data collected from 1978 to 2002 by the MA DFW (id. at A-47 to A-50). Based on its examination of these data, the Company identified 79 finfish species in the vicinity of the proposed project (id.; Exh. DTE-W-5). The Company stated that the identified finfish species would suffer only temporary impacts as a result of installation of the proposed submarine transmission line (Exh. FPR-1, Att. at A-50). The Company noted that the proposed project likely would affect finfish indirectly, through impacts on bottom habitat that in turn would influence finfish behavior (id.). The Company explained that installing the proposed submarine transmission line would disturb bottom habitat temporarily, on a localized basis, and that finfish would adjust their behavior to avoid locations of disturbance while installation was ongoing (id.).

3. EMF

Nantucket Electric indicated that it performed electric and magnetic field ("EMF") calculations to determine the maximum magnetic field values that would be produced by the proposed transmission line (Exh. DTE-L-3, App. A. Part 1, at 1; Tr. 1, at 166). For the typical land segment of the transmission line, the maximum EMF values at one meter above ground over the conduit would be 1.0 and 2.0 milligauss ("mG") for peak normal and peak contingency operation, respectively (Exh. DTE-L-3, App. A Part 1, at 4; Tr. 1, at 166). The maximum magnetic field values for Nantucket Sound at the mudline (i.e., bottom of the Sound) would be 0.72 and 1.44 mG for peak normal and peak contingency operation, respectively (Exh. DTE-L-3, App. A Part 1, at 4). The maximum magnetic field values would be 0.22 and 0.43 mG, respectively, for peak normal and peak contingency operation at the Hyannis

landfall, and 0.24 and 0.14 mG, respectively, for peak normal and peak contingency operation at the Nantucket landfall (id.). Dr. Valberg, a witness for the Company, testified that the peak figure directly above the conductors would be 2 mG in general, even at contingency loading conditions (Tr. 1, at 153, 166). Dr. Valberg stated that EMF values drop off rapidly with lateral distance from the center line (id.).[17]

Nantucket Electric asserts that: (1) no regulatory or public health agency has proposed a numerical standard based on health applicable to the project area; and (2) EMF values of the proposed transmission line are well below the guideline levels set by the International Committee on Non-Ionizing Radiation Protection and the Institute of Electrical and Electronics Engineers (Tr. 1, at 148-149). According to the Company's witness, these levels are based on biology and are in the range of 800 mG and higher (id.).

4. Other

The Company stated that it expected that installation of the submarine cable segment of the proposed transmission line would occur during the fall and winter (Tr. 1, at 63). The Company noted that a seasonal restriction on construction, established primarily to avoid peak periods of boat traffic and fish migration, had prevented the Company from beginning installation of the submarine segment of its first transmission line to Nantucket before the

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[17] The witness also testified that biological laboratory tests and epidemiological studies regarding the effects of exposure to magnetic fields have been inconclusive and inconsistent (Tr. 1, at 144-151). He concluded that the cause and effect relationship between magnetic field exposure and disease addressed in such tests or studies is insubstantial (id.).

month of October (id. at 63, 67). The Company anticipated a similar restriction in the instant case,[18] as well as a restriction precluding construction of the land segments of the proposed transmission line between Memorial Day and Labor Day (id. at 64).[19]

The Company indicated that some construction at the Barnstable Airport would take place at the end of a runway (id. at 68). The Company stated that it would use HDD and pipe-jacking at this location, as mandated by FAA and Barnstable Airport requirements, in order to prevent disturbance of the surface of the traversed area and to avoid interference with the ability of an airplane to overrun the runway (id.).

The Company also indicated that it would rely on HDD to install the mainland (Barnstable) and island (Nantucket) ends of its proposed submarine cable (see Section III.D.2, above) at transition manholes located close to the waterfront in existing paved streets (Exhs. NEC-RR-6, Att. B at Fig. 1-2; NEC-RR-6, Att. C at Fig. 1-2; Tr. 1, at 89-99). The Company noted that the HDD work would last approximately a week at each of the Barnstable and Nantucket land-sea interfaces, with construction likely occurring on a 24-hour-per-day basis for at least some of that time (Exhs. DTE-C-7; DTE-C-10; Tr. 1, at 93).

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[18] The Company indicated that if, as seemed probable, construction at the Barnstable Airport and in some of the industrial-zoned roads approaching the proposed new Barnstable substation were exempted from the May-to-September restriction, the Company would proceed with construction activities at these locations during the summer (Tr. 1, at 66-67).

[19] The Company stated that it would likely proceed with the Barnstable- and Nantucket-based land segments of the proposed project simultaneously, and estimated that construction would require approximately two seasons to complete (Tr. 1, at 66).

The Company stated that most construction for the land-based segments of the proposed project would occur from 7:00 a.m. to 5:00 p.m.; however, it stated that it had agreed to a request from the management of a Banknorth branch in Barnstable to conduct construction activities near the bank outside hours of bank operation (id. at 71-72). The Company noted that, because Banknorth building is located in an area abutted by major roadways, an airport, and commercial uses, the off-peak construction hours would not inconvenience neighboring businesses or residents (id.). The Company indicated that it would adjust construction hours to address the concerns of other residential or business abutters insofar as it could do so without slowing construction or shifting negative impacts to other residents or businesses (id.).

The Company stated that it would use standard construction techniques to install the conduit and manhole system for underground transmission lines (Exh. FPR-1, Att. at A-14; Tr. 1, at 74-79). The Company indicated it would install the underground transmission lines outside the normal tourist season when traffic flow is heaviest on Cape Cod and Nantucket (Tr. 1, at 75). The Company stated it would use detail officers as required to control traffic and ensure emergency passage of ambulances, police cars, fire trucks, and other service vehicles (id. at 77-82). The Company noted that, although a formal safety plan for the proposed project was not yet in place, the Company's general approach to installations of the type proposed was to maintain local and emergency access in the area affected by construction (id.).[20] The Company also anticipated working with local officials to develop plans to manage

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[20] In support of its statement, the Company submitted examples of rulebooks used in construction of its projects, the "Manual of Uniform Traffic Control Devices Standards," and "Work Zone Safety Guidelines for Construction, Maintenance, and

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traffic during construction of the land-based segments of the proposed project (id. at 73-75, 77-78).[21]

The Company stated that its contractor, the Public Archeology Laboratory ("PAL"), completed investigations of submarine and terrestrial historical archeology along the proposed project route for submission to the Massachusetts Historical Commission ("MHC") and the Massachusetts Bureau of Underwater Archeological Resources ("BUAR") (Exh. FPR-1, at 4, 5). The Company received letters from each agency that indicated general satisfaction with the results of the submitted investigations (Tr. 1, at 17). The Company noted that the MHC required that an archeological monitor be on site during proposed construction along Ocean Street (id.).

IV. ANALYSIS AND FINDINGS

Nantucket Electric is an electric company as defined by G.L. c. 164, § 1, authorized to generate, distribute and sell electricity. See Nantucket Electric Company, D.P.U. 95-67 (1995); Nantucket Electric Company, D.T.E. 99-7 (1999). Accordingly, the Company is authorized to petition the Department for a determination under G.L. c. 164, § 72 that its proposed transmission line "is necessary for the purpose alleged, and will serve the public convenience, and is consistent with the public interest." As discussed in Section II, above, the Department, in making this determination, first examines the need for or public benefits of the

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[20](…continued)
Utility Operators (April 2002)" (Exhs. NEC-RR-5; NEC-RR-5, Att. A).

[21] The Company indicated that it had received considerable input on the design and siting of the transmission project from community advisory groups in Barnstable and Nantucket (Tr. 1, at 81-82).

proposed use. The Department then examines the identified alternatives and the environmental and other impacts of the project. Finally, the Department balances the interests of the general public with any identified local interests.

As an initial matter, the Department finds that Nantucket Electric, in its filing under G.L. c. 164, § 72, has complied with the requirement of § 72 that it describe the proposed transmission line, provide diagrams showing its general location, and estimate its cost in reasonable detail.

A. Need for the Proposed Project

Nantucket Electric has documented the need for a new 46 kV underground and submarine cable to augment electric power supply on Nantucket. The Company's documentation attributes increasing demand for electric power on Nantucket to a surge in on-island population growth and an associated jump in residential construction. The Company has shown, based on its latest Nantucket load forecast, that strong load growth on Nantucket will continue despite the Company's efforts to reduce Nantucket energy demand, and is likely to reach the maximum cable rating on the existing Nantucket transmission line in mid-2005. The Company has shown that construction of the proposed transmission line and ancillary equipment should enable the Company to maintain a reliable supply of electricity for distribution and sale to its customers on Nantucket. Accordingly, the Department finds both a need for, and public benefits of, the construction and operation of the proposed transmission line.

B. The Proposed Project and Alternatives

As noted in Section III.B, above, the Company considered three plans to address

anticipated demand for electric power on Nantucket. Plan I involved installation of a 33-mile underground and submarine 46 kV transmission line from Barnstable to Nantucket and construction of associated equipment, including a new substation in Barnstable. Plan II would use DSM programs to reduce electric demand on Nantucket. Plan III would meet Nantucket commercial and residential demand for electric power with existing diesel and new facilities on the island. The Company also considered using renewable energy, including biomass, landfill gas, and wind energy, for electric power generation, but determined that this approach was not feasible.

The record demonstrates that DSM would be of limited effectiveness in reducing the demand for electric power on Nantucket, as Nantucket Electric serves primarily residential and small-to-medium commercial establishments, and DSM programs are most effective with larger scale commercial or industrial customers. The record also demonstrates that on-island generation would likely reduce Nantucket air quality, pose concerns related to plant site selection, fuel transportation and storage, and exceed the cost of installing a second submarine cable by 25 percent. With respect to renewable energy, the record demonstrates that biomass and landfill gas would not generate energy in sufficient quantities to meet the identified need on Nantucket. The record demonstrates that wind energy, due to its variability, would also prove unreliable in meeting the full identified need on Nantucket.

Nantucket Electric has indicated that it favors Plan I because the combination of its existing transmission line and the proposed new line would meet forecasted peak demand on Nantucket until 2032 and, in addition, would reduce line losses to the electric transmission system on Nantucket. The Department finds that the Company's decision to pursue Plan I is

reasonable, given its greater reliability, lower cost, and lower impact to air quality on Nantucket.

C. Impacts of the Proposed Project

In accordance with its responsibility to undertake a broad and balanced consideration of all aspects of the general public interest and welfare, the Department examined the impacts associated with the proposed project to identify any significant impacts that might occur during construction and operation of the project.

1. Wetlands and Endangered Species

The record demonstrates that, by installing land-based cable segments in roadways and areas of existing disturbance, the Company would essentially confine the inland wetland impacts of its proposed project to buffer zones. The record also demonstrates that the Company would limit these impacts by using standard construction and erosion control methods. The record further shows that the Company would institute an erosion and sediment control program specifically to reduce the risk of impacts to wetland resource areas during project construction.

With respect to impacts to endangered, threatened, or rare species, the record demonstrates that the Company has consulted a wide range of agencies and organizations, including the USFWS, USACE, NMFS, NHESP, MA DFW, and NCF, and that these agencies, with the exception of the USACE, have provided the Company with comments indicating that the proposed project would not have negative impacts on endangered, threatened, or rare species.

The Department notes that Nantucket Electric will have to work with the Nantucket

and Barnstable Conservation Commissions to develop procedures to guard against adverse impacts to local wetlands from the proposed project. Assuming implementation of any conditions imposed by the Conservation Commissions and by the USACE, the Department finds that the Company has established that it will take all reasonable measures to minimize the potential wetlands impacts and any impacts on protected species associated with the construction of the proposed transmission line.

2. Coastal Resources

The record demonstrates that the proposed use of HDD to establish the land-sea interface of the proposed transmission line would avoid impacts to beaches, tidal flats, and land subject to coastal storm flow. The record demonstrates that the proposed use of a jet plow to install the submarine cable segment of the proposed project would limit the duration and extent of impacts to Nantucket Sound bottom sediments, confining them to a three-foot-wide trench over most of the submarine route.

The record shows that any impacts to shellfish or eelgrass resources would fall under the purview of the Conservation Commissions with jurisdiction over the affected resource areas. The record shows that, prior to commencement of construction, the Company would conduct an oceanographic survey to establish the baseline size and location of shellfish and eelgrass resources.

The record demonstrates that six marine species protected under federal and state endangered species acts are likely to be present in the area of the proposed project. The record demonstrates that construction for the proposed project is unlikely to cause impacts to these species because of (1) the rate and timing of construction, (2) the localized nature of

disturbances to coastal resources, and (3) the ability of the species to move clear of work on the cable.

With respect to other marine species, especially finfish, the record shows minor, temporary impacts to 79 finfish species associated with Nantucket Sound. The record shows that installation of the proposed submarine transmission line likely would result in temporary and localized impacts to bottom habitat, and that finfish likely would avoid areas of underwater disturbance during the installation process. Consequently, the Department finds that the Company has established that it will take all reasonable measures to minimize impacts on coastal resources associated with the proposed transmission line.

3. EMF

The record demonstrates that the proposed transmission line would be constructed and tested in conformance to industry standards. The record also shows that the peak magnetic fields directly above the conductors, even at contingency loading conditions, would be 2 mG and would drop off rapidly with lateral distance from the center line. This level is significantly below both the EMF guidelines of the International Committee on Non-Ionizing Radiation Protection and the Institute of Electrical and Electronics Engineers, and the 85 mG maximum level of magnetic field emissions previously accepted by the Massachusetts Energy Facilities Siting Board. Consequently, the Department finds that Nantucket Electric has established that it will take all reasonable measures to minimize the EMF impacts of the proposed transmission line.

4. Other

The record demonstrates that the Company likely would face a number of restrictions with respect to scheduling construction for the proposed project, including restrictions preventing construction of the submarine segment between May and October and construction of the land-based segments from Memorial Day to Labor Day. The record further demonstrates a likely moratorium on construction of the submarine segment during seasons of peak fish migration and recreational boating.

The record shows that in both Barnstable and Nantucket, HDD installation of the Company's proposed transmission line at the land-sea interface would take approximately seven days and would continue around the clock at least some of that time. The record indicates that the Company would initiate HDD to install the mainland (Barnstable) and island (Nantucket) ends of its proposed submarine cable at transition manholes located close to the waterfront in existing paved streets. The Department notes the potential for HDD operations to produce dust and noise that may temporarily disturb nearby residents and commercial enterprises. The Company intends to work with municipal officials and abutters to reduce non-HDD impacts elsewhere along the route of the proposed project. Because of the greater level of potential impacts associated with round-the-clock HDD construction, the Department requires the Company to work cooperatively with municipal officials and affected individuals in Barnstable and Nantucket to minimize any local impacts associated with HDD operations.

The record shows that construction would for the most part occur between 7:00 a.m. and 5:00 p.m., but that the Company would consider adjusting the hours of construction on its proposed project to address the concerns of residential or business abutters. The record

demonstrates that the Company would make a concerted effort to arrange for such adjustments so long as the adjustments would not slow construction or shift negative impacts to other residents or businesses.

With respect to impacts of the proposed project on Barnstable Airport operations, the record demonstrates that the Company's use of HDD and pipe-jacking at Barnstable Airport would leave the surfaces of runways and runway overruns intact and available to aircraft throughout construction. The record demonstrates that elsewhere, in constructing the land-based segments of its proposed project, the Company would use standard techniques for installation of a conduit and manhole system for underground transmission lines, and detail officers as required to control traffic and ensure safety. The Department notes that the Company, in consultation with local officials, intends to develop plans to ensure emergency passage of ambulances, police cars, fire trucks, and other service vehicles, and, in general, to manage traffic in areas of Barnstable and Nantucket affected by construction.

Assuming compliance with the above condition, and implementation of (1) agreements made with residential or commercial abutters, and (2) any conditions imposed by local authorities with respect to (a) safeguarding aviation at Barnstable Airport, (b) timing installation of the proposed project, or (c) ensuring local and emergency vehicle access to areas affected by construction for the proposed project, the Department finds the Company has established that it will take all reasonable measures to minimize construction-related impacts of the proposed transmission line.

With respect to impacts to historical resources, the record demonstrates that the Company's contractor, PAL, completed investigations of submarine and terrestrial historical

archeology for submission to the MHC and BUAR, and that the two agencies with the results of these investigations. The record also shows that an archeological monitor be on site during proposed construction along Ocean Street, as required by MHC. Accordingly, the Department finds the Company has established it will take all reasonable measures to minimize impacts to historic resources resulting from construction of the proposed transmission line.

D. Conclusion

The Department has found, above, that there is both a need for, and public benefits of, the construction and operation of the proposed transmission line. The Department also has found that Nantucket Electric's decision to pursue the proposed project, rather than one of the identified alternatives, was reasonable. Based on the analysis, above, of the environmental and other impacts of the proposed project, the Department finds that the public benefits of the project outweigh its local impacts (primarily temporary impacts to coastal resources bordering Nantucket and Barnstable and in Nantucket Sound, and to traffic flow in Barnstable and Nantucket during months other than those of the peak tourist season). Consequently, pursuant to G.L. c. 164, § 72, the Department finds that, with implementation of the mitigation measures proposed by Nantucket Electric, the proposed 46 kV electric transmission line is necessary for the purpose alleged, will serve the public convenience, and is consistent with the public interest.

V. ORDER

Accordingly, after due notice, hearing and consideration, it is hereby

ORDERED: That the proposed 46 kV underground and submarine electric cable in the Towns of Barnstable and Nantucket and waters within the Town of Yarmouth offshore

boundaries for the distribution of electricity, as described in the petition and exhibits of Nantucket Electric Company, is necessary for the purpose alleged, and will serve the public convenience and is consistent with the public interest pursuant to G.L. c. 164, § 72; and it is

FURTHER ORDERED: That Nantucket Electric Company work cooperatively with municipal officials and affected individuals in Barnstable and Nantucket to minimize any local impacts associated with HDD operations; and it is

FURTHER ORDERED: That Nantucket Electric Company shall obtain all other governmental approvals necessary for this project before construction commences; and it is

FURTHER ORDERED: That Nantucket Electric Company shall serve a copy of this Order upon the Conservation Commission, Town Council, Town Clerk, and Planning Division of Barnstable; the Conservation Commission, Board of Selectmen, Town Clerk, and Planning Board of Nantucket, and the Conservation Commission, Board of Selectmen, Town Clerk, and Planning Board of Yarmouth, Massachusetts, within five business days of issuance and shall certify to the Secretary of the Department within ten days of its issuance that such service has been accomplished.

By Order of the Department,

_____
Paul G. Afonso, Chairman

_____
W. Robert Keating, Commissioner

_____
Eugene J. Sullivan, Jr., Commissioner

_____
Deirdre K. Manning, Commissioner

Appeal as to matters of law from any final decision, order or ruling of the Commission 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 Commission be modified or set aside in whole or in part.

Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission 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. (Sec. 5, Chapter 25, G.L. Ter. Ed., as most recently amended by Chapter 485 of the Acts of 1971).