



The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 10-54

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Petition of Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, for approval by the Department of Public Utilities of two long-term contracts to purchase wind power and renewable energy certificates, pursuant to St. 2008, c. 169, § 83 and 220 C.M.R. § 17.00 et seq.

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EXECUTIVE SUMMARY

Introduction

In this Order, the Department approves National Grid's petition to enter into a power purchase agreement with Cape Wind for the purchase of 50 percent of the output of the Cape Wind project ("contract" or "Cape Wind contract"). The Department finds that the Cape Wind contract is both cost-effective and in the public interest.

The Department denies National Grid's petition to approve a second power purchase agreement with Cape Wind for the remainder of the project's output. We find that approval of a second contract at this time would serve no clear purpose.

The Cape Wind project is a wind-energy generating facility of up to 468 MW, to be located offshore of Massachusetts in the federal waters of Nantucket Sound. Under the Cape Wind contract, National Grid agrees to purchase the energy, capacity, and renewable energy credits associated with the project for \$187 per MWh for 15 years, escalating annually at 3.5 percent. There are provisions for upward price adjustments under some circumstances and for downward adjustments under others. There is also a provision allowing National Grid to extend the contract beyond 15 years at potentially reduced prices for customers.

The power from this contract is expensive in light of today's energy prices. It may also be expensive in light of forecasted energy prices—although less so than its critics suggest. There are opportunities to purchase renewable energy less expensively. However, it is abundantly clear that the Cape Wind facility offers significant benefits that are not currently available from any other renewable resource. We find that these benefits outweigh the costs of the project.

One of the many benefits that Cape Wind provides is that it will assist National Grid and Massachusetts in meeting the renewable energy requirements of the Green Communities Act, as well as the greenhouse gas emissions reduction requirements of the Global Warming Solutions Act. Meeting those greenhouse gas emission mandates will require significant investments across all sectors of the economy, and especially from the electricity sector. We conclude that those requirements are unlikely to be met without the Cape Wind contract and the associated emissions reductions from the project.

In making these findings the Department is mindful of the impacts that the Cape Wind contract will have on National Grid electric customers. Based on the range of forecasts used in this case, it appears that the contract could increase the bills of National Grid residential customers by roughly 1.3 to 1.7 percent, and the bills of large commercial and industrial customers by roughly 1.7 to 2.2 percent. We find that this increase in electricity bills is acceptable, given the significant and unique benefits of the project.

Standard of Review

Section 83 of the Green Communities Act requires all electric distribution companies in Massachusetts to solicit proposals from renewable energy developers twice in the five-year period from 2009 to 2014 and, if the companies receive reasonable proposals, to “enter into cost-effective long-term contracts to facilitate the financing of renewable energy generation.” In order to be eligible for long-term contracts, renewable resources must: be cost-effective to Massachusetts electric ratepayers over the term of the contract; provide enhanced electricity reliability within the Commonwealth; contribute to moderating system peak load requirements; and create additional employment where feasible.

Furthermore, the Department always considers the public interest in the fulfillment of our duties. Thus, our consideration of long-term contracts for renewable energy under Section 83 includes a determination that the contract is in the public interest. In this case we ask, among other things, whether National Grid’s customers are being asked to pay too much for this resource, whether the project’s developers are likely to realize windfall profits, and whether the purchase of other renewable power would have made more sense. In regard to all of these questions, we conclude that the Cape Wind contract is in the public interest.

Cost-effectiveness

Section 83 requires that in determining the cost-effectiveness of proposed long-term contracts for renewables the Department “take into consideration both the potential costs and benefits of such contracts.” While parties to this proceeding have applied the concept of cost-effectiveness in different ways, the statutory language makes it clear that in order for a Section 83 contract to be determined cost-effective its benefits must outweigh its costs.

As we have said, the price of the Cape Wind contract is \$187 per MWh for 15 years, with a 3.5 percent annual escalator and opportunities for both upward and downward price adjustments depending on a variety of contingencies. Contrary to the assertions of some parties in the case, there are no additional transmission costs to customers beyond those that are already included in the contract price, and no costs of any significance to back up the addition to the regional electricity grid of an intermittent resource the size of Cape Wind.

On the other side of the ledger, the benefits associated with the Cape Wind contract include the value associated with the energy, capacity, and renewable energy credits that National Grid will purchase through the contract. In those years when the contract cost exceeds that value, National Grid customers will pay “above-market costs” for the Cape Wind contract. Based on the evidence presented, we believe the most likely range of above-market costs over the 15 years of the contract, including consideration of the price suppression effect, is from \$420 million to \$695 million.

We have included the effect of price suppression in the calculation of above-market costs because price suppression will offset at least some of the contract's potential above-market costs to National Grid's customers, thereby reducing bill impacts, and will reduce prices for all of the other electricity customers in the state and region. Price suppression occurs when an electricity resource bids into the wholesale energy market at low or zero cost (on account of low or zero fuel costs), thereby establishing a lower energy price in the wholesale market. All of the parties in this proceeding who have addressed price suppression agree that the Cape Wind facility will reduce wholesale energy prices, although there are differing views as to the magnitude and duration of the effect.

In order for the Cape Wind contract to be considered cost-effective, the unquantified benefits of the contract must outweigh the net above-market costs that are expected from the contract. We conclude that the benefits of the Cape Wind project will exceed such potential costs. The key unquantified benefits are described briefly below.

Assisting National Grid and the Commonwealth to comply with state renewables and greenhouse gas emissions reduction requirements. The state's renewable portfolio standard requires 15 percent of the state's electricity supply to come from renewables by 2020, with an additional one percent requirement each year thereafter. Most other states in the region have comparable requirements, which limit the amount of regional renewable resources that will be available to serve Massachusetts. The state's Global Warming Solutions Act requires a reduction in greenhouse gases of: (1) ten to 25 percent by 2020; (2) 80 percent by 2050; and (3) interim target levels in 2030 and 2040 that will lead to achieving the 2050 target. In addition to these requirements, the Green Communities Act establishes a goal of meeting 20 percent of the state's electric demand through renewable and alternative energy generation by 2020.

The analyses of the supply of and demand for renewable resources presented in this case make it clear that the Commonwealth and the region will require the development of offshore wind in order to meet their renewables and greenhouse gas emissions requirements. The demand for renewable resources over the next 15 to 20 years will far outstrip the current supply. While there is the potential, at least in theory, for new development of other types of renewable resources in the region to fill this gap, many of the other options face significant hurdles in the near- to mid-term and, thus, are unlikely to come close to meeting the demand for renewables in the absence of offshore wind. In particular, Massachusetts has recently promulgated draft regulations that will severely limit the eligibility of biomass for renewable portfolio standard credits; solar power installations in the state currently stand at fewer than 30 MW and, although projected to increase, are currently more expensive than other renewables options; and land-based wind, although a promising resource, in many instances faces significant siting and transmission constraints in order to serve Massachusetts load.

We are fully persuaded that if Massachusetts is to meet its statutory renewables and greenhouse gas emissions reduction requirements, offshore wind will have to be part of the

mix. Notwithstanding the enormous wind resource off the New England and Mid-Atlantic coast, Cape Wind is the only offshore wind facility in the country that has even approached the end of its permitting process, which in the case of Cape Wind has taken ten years. We note by comparison that there are 43 offshore wind projects with an aggregate capacity of more than 2,000 MW in twelve countries already in operation, mostly in Europe, and 16 others with 3,500 MW of capacity, also in Europe, financed and/or under construction. This is the moment for the state and the region to begin to capture the potential of offshore wind by approving the long-term contract that will help the country's largest proposed offshore wind facility become a reality.

Providing National Grid the option to extend the contract beyond 15 years. The Cape Wind contract offers National Grid the option to extend the contract for ten years beyond the initial 15-year term, at a price that covers the remaining costs of operating the facility plus a reasonable rate of return for Cape Wind. This option would be exercised by National Grid only if market prices are higher than the cost-based prices for Cape Wind, and could provide significant benefits to National Grid customers at a time when fossil fuel prices could be higher and greenhouse gas emissions reductions requirements more stringent than during the first 15 years of the contract.

Enhancing electricity reliability in the state. The Cape Wind project will interconnect with a substation in southeastern Massachusetts, very close to the largest electricity loads in New England. It is fueled by wind—a fuel that does not depend on delivery into the region and is especially plentiful during the winter, when natural gas is at a premium for heating purposes. The location is advantageous from a reliability perspective as compared to more remote renewable resources, especially those in relatively transmission-constrained areas north of Massachusetts.

Moderating system peak load. Offshore wind facilities in the Northeast are expected to have a higher capacity factor, with greater coincidence to both summer and winter peak loads, than onshore wind or solar facilities. Moreover, Horseshoe Shoal, the area of Nantucket Sound where the project will be located, has one of the strongest and most consistent wind regimes in New England. Actual hourly wind data shows that the project's capacity factor would have averaged an impressive 76 percent during the region's top ten historic peak hours.

The creation of additional employment. It is undisputed that the construction and operation of the Cape Wind facility will lead to increased jobs in the region. There will also be additional jobs created as a result of the reduction of electricity bills throughout the region arising from the price suppression effect. On the other hand, the increase in above-market costs from the contract is expected to have the effect of reducing jobs. Evidence in this case shows that all of these effects combined are likely to create an average of 162 jobs per year for the 15 years of the contract. We note, as well, that a number of studies in the record of this proceeding, including one conducted by the United States Department of Energy and another by the Department of Economics and Political Economy Research Institute at the University of

Massachusetts, conclude that the project will have a positive impact on long-term employment and on resulting economic activity.

Public Interest

Although the Department always considers the public interest in its decision-making, there is no public interest litmus test. The determination is case specific, taking into consideration the particular issues raised in a given case. In this proceeding, we address the following questions to determine whether the Cape Wind contract is in the public interest:

- Is the contract reasonable and appropriate relative to alternative long-term contracts for renewable power?
- Is the contract price reasonable for the specific type of resource (i.e., offshore wind) being purchased?
- Are the amount and type of renewable power purchased appropriate?
- Are the bill impacts on National Grid's customers acceptable?

Is the contract reasonable and appropriate relative to alternative long-term contracts for renewable power? A contract for renewable power does not need to be the lowest cost contract available in order to be cost-effective. Nonetheless, if an electric distribution company chooses a contract whose cost significantly exceeds the cost of alternative renewable resources, it must demonstrate that doing so is in the public interest. The evidence in this proceeding makes it clear that the Cape Wind project offers unique benefits relative to the other renewable resources available. In particular, the project's combination of size, location, capacity factor, advanced stage of permitting, and advanced stage of development is unmatched by any other renewable resource in the region for the foreseeable future. This combination of benefits will significantly enhance the ability of National Grid to achieve renewables and greenhouse gas emissions reduction requirements.

Is the contract price reasonable for the specific type of resource (i.e., offshore wind) being purchased? We have confidence for a number of reasons that the price of the Cape Wind contract is reasonable. First, the Attorney General used cost data from offshore wind projects in the United States and Europe to derive a range of estimates for the Cape Wind project's likely installed cost, financing cost, and future operating and maintenance expenses. Comparing the Cape Wind project pricing to the derived estimates, she concluded that the contract price is consistent with her own estimate of project costs.

Next, because offshore wind will be needed in order to meet state renewables and greenhouse gas requirements, the cost of this project should be compared not only to the cost of other types of renewable resources that submitted proposals for long-term contracts, but also

to other offshore wind projects. These are likely to offer benefits similar to those of the Cape Wind project, such as substantial size, high capacity factor, and proximity to large population centers. In the United States, the opportunities for comparison are limited. The one other contract for a project of roughly comparable size and with publicly available price data is the Bluewater project off the Delaware coast, which was selected through a competitive process. The levelized price of the Cape Wind contract is slightly lower than that of the Bluewater contract. There are many more offshore wind projects in Europe, many of which are more expensive than Cape Wind, but some of which are less expensive.

Finally, the contract's downward price adjustment mechanisms, in particular the provision for reducing the price if the project's internal rate of return is higher than 10.75 percent, assure that the developer will not reap windfall profits. We note that the costs of the facility that will be used to calculate the rate of return are subject to review by an independent verification agent.

Are the amount and type of renewable power purchased appropriate? National Grid has chosen to enter into one contract for a single wind project to meet its Section 83 requirement to solicit long-term contracts for renewable power. The total amount of generation from the Cape Wind contract is expected to equal roughly 3.5 percent of its total distribution demand, slightly higher than the three percent requirement identified in Section 83. This decision raises the question of whether Cape Wind has purchased too much renewable generation, and too much renewable generation from one project.

National Grid justifies its decision chiefly on the grounds that the amount is necessary in order to facilitate the financing of the project. The Company also states that it has chosen this amount of renewable generation from Cape Wind because of the balance it wishes to achieve in its portfolio of energy contracts. We find National Grid's decision to purchase this amount of renewable generation through a single contract to be reasonable, given the unique circumstances associated with the Cape Wind project.

Are the bill impacts on National Grid customers acceptable? Based on the range of forecasts used in this case, the Cape Wind contract could increase the bills for National Grid customers by approximately 1.7 percent (for residential customers) to 2.2 percent (for large commercial and industrial customers). With price suppression factored in, the range would be from approximately 1.3 percent (for residential customers) to 1.7 percent (for large commercial and industrial customers). We find that the range of potential bill impacts is acceptable, given the significant and unique benefits offered by the Cape Wind project. We note as well that these bill impacts are small relative to the volatility that electric customers regularly experience due to the fluctuations in wholesale electricity prices, and that the contract will mitigate that volatility.

Compliance with Long-Term Contracting Regulations; Facilitation of Financing; Cost Recovery

During the pendency of this proceeding and subsequent to the initiation of National Grid's contract negotiations with Cape Wind, the Department changed its regulations and suspended the applicability of the provision in Section 83 that proposals for renewable resources under Section 83 be located within the Commonwealth or in adjacent federal waters. In that regulatory proceeding, the Department directed National Grid to demonstrate in *this* proceeding compliance with the new long-term contract regulations.

In response to that directive, National Grid maintains that it entered into a long-term contract with Cape Wind because of the project's unique attributes and because of National Grid's view of the enormous potential of offshore wind, not because of the facility's location off the coast of Massachusetts. It identified and considered alternative resources, which did not change its decision. We are persuaded by National Grid's assertions in that regard.

We are also persuaded that approval of the contract is required in order to facilitate the financing of the Cape Wind project. A project of this scale and risk requires a power purchase agreement in order to obtain financing.

Finally, pursuant to Section 83, we have exercised our discretion to allocate any above-market costs of the Cape Wind contract to all of the Company's distribution customers because all customers, not just those receiving basic service, will benefit from the contract.

Second Cape Wind Contract

In this Order, the Department denies National Grid's request to approve the second power purchase agreement with Cape Wind for the remainder of the project's output. The second contract is intended for assignment by National Grid to another party, and pre-approval by the Department would purportedly facilitate that assignment.

The nexus between pre-approval of the second Cape Wind contract and advancement of the purposes of Section 83 is too tenuous. First, Cape Wind has the right to terminate the second contract at any time before it is assigned to another party, and either party may terminate it if it is not assigned within a certain time period. Second, that contract may be assigned to a party that is not even subject to the Department's jurisdiction. Third, Cape Wind and a future purchaser may modify its terms after assignment. If Cape Wind enters into another contract with a party subject to the Department's jurisdiction, the Department will review such contract at that time.

I. INTRODUCTION AND PROCEDURAL HISTORY

On May 10, 2010, Massachusetts Electric Company (“MECo”) and Nantucket Electric Company (“Nantucket”), each d/b/a National Grid (together, “National Grid” or “Company”), filed a petition (“Petition”) with the Department of Public Utilities (“Department”) seeking review and approval of two long-term contracts¹ to purchase wind power and renewable energy certificates (“RECs”) from Cape Wind Associates, LLC (“Cape Wind”), pursuant to An Act Relative to Green Communities (“Green Communities Act”), St. 2008, c. 169, § 83 (“Section 83”) and 220 C.M.R. § 17.00 et seq. On December 29, 2009, National Grid obtained the Department’s approval for its proposed timing and method of soliciting a long-term contract with Cape Wind in Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 09-138 (2009).

Section 83 of the Green Communities Act requires each electric distribution company to solicit proposals for long-term contracts of ten to 15 years in duration from renewable energy developers at least twice over a five-year period beginning on July 1, 2009, and, if the proposals received are reasonable, to enter into cost-effective long-term contracts to facilitate the financing of renewable energy generation. See also 220 C.M.R. § 17.03(1). The

¹ On May 10, 2010, National Grid filed the Cape Wind long-term contracts with the Department. On June 4, 2010, National Grid filed the Petition, prefiled testimony, a motion for confidential treatment of certain materials, and a motion to suspend the applicability of the jurisdictional boundaries clause of Section 83. See Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (May 14, 2010) and Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (May 20, 2010).

Department must review and approve a proposed long-term contract before it can become effective. See also 220 C.M.R. § 17.03(2).

Pursuant to the first proposed contract (“PPA-1”), National Grid will purchase 50 percent of the Cape Wind facility’s estimated total output of electricity supply, associated RECs, and capacity for a 15-year term. The other proposed contract (“PPA-2”) is for the balance of the energy, associated RECs, and capacity for a 15-year term from the Cape Wind facility and may be assigned by National Grid to a third party. The Department docketed the matter as D.P.U. 10-54.

The Department held three public hearings in the Company’s service territory, in: (1) Bridgewater on June 16, 2010; (2) Nantucket on June 21, 2010; and (3) Worcester on June 22, 2010. The Attorney General of the Commonwealth (“Attorney General”) intervened in this proceeding and the Department granted petitions for full intervenor status filed by: (1) Alliance to Protect Nantucket Sound (“Alliance”); (2) Associated Industries of Massachusetts (“AIM”); (3) Cape Wind; (4) Clean Power Now (“CPN”); (5) Conservation Law Foundation (“CLF”); (6) Natural Resources Defense Council (“NRDC”); (7) Union of Concerned Scientists (“UCS”); (8) Constellation Energy Commodities Group, Inc.; (9) Department of Energy Resources (“DOER”); (10) Morris Energy Group LLC and Lowell Cogeneration Company, L.P. (together, “Lowell Cogen”); (11) New England Power Generators Association (“NEPGA”); (12) TransCanada Power Marketing, Ltd. (“TransCanada”); and (13) Wal-Mart Stores East, L.P. and Sam’s East, Inc (together, “Wal-Mart”). The Department granted the following entities intervenor status for the limited

issue of the ratemaking treatment of PPA-1: (1) Direct Energy Services, LLC (“Direct Energy”); (2) Constellation New Energy, Inc; and (3) and Retail Energy Supply Association (“RESA”). In addition, the Department granted the following entities limited participant status: (1) Cape Light Compact (“Compact”); (2) Maine Renewable Energy Association (“MREA”); (3) NSTAR Electric Company (“NSTAR Electric”); (4) Pioneer Renewable Energy, LLC (“Pioneer Energy”); and (5) Western Massachusetts Electric Company (“WMECo”).²

On July 30, 2010, National Grid, the Attorney General, Cape Wind, and DOER (together, “Settling Parties”) filed notice of an offer of settlement (“Settlement”). On August 4, 2010, the Settling Parties filed the Settlement along with a joint motion (“Joint Motion”) for approval of the Settlement. As described in Section IV, below, the Settlement: (1) made certain amendments to PPA-1 and PPA-2; (2) resolved a discovery dispute between the Attorney General and Cape Wind; and (3) required a recommendation for approval of the Petition by the Attorney General. On August 9, 2010, the Settling Parties filed amendments to PPA-1 and PPA-2, supporting documentation, and updated exhibits.

National Grid sponsored the testimony of: (1) Richard A. Rapp, Esq., senior vice-president of energy portfolio management for National Grid USA Service Company, Inc.;

² For a detailed discussion on the status of parties to this proceeding, refer to the following: Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Ruling on Intervention (July 9, 2010); and Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Interlocutory Order on Appeal of Hearing Officer Ruling on Petitions to Intervene and Participate (August 20, 2010).

(2) Madison N. Milhous, Jr., director of wholesale market relations for energy portfolio management for National Grid USA Service Company, Inc.; (3) Jeanne A. Lloyd, manager of electric pricing – New England for National Grid USA Service Company, Inc.; and

(4) Susan F. Tierney, Ph.D., managing principal of Analysis Group, Inc. The Attorney General sponsored the testimony of the following principals of The Brattle Group:

(1) Jürgen Weiss, Ph.D.; and (2) Judy Wei Ya Chang. AIM sponsored the testimony of Mark E. Garrett, Esq., president of Garrett Group, LLC. Alliance sponsored the testimony of: (1) Jonathan A. Lesser, Ph.D., president of Continental Economics, Inc.; and

(2) Thomas M. Melone, Esq., chief executive officer of Allco Renewable Energy Limited. Cape Wind sponsored the testimony of: (1) Dennis J. Duffy, Esq., vice-president of regulatory affairs at Energy Management, Inc.; and (2) Robert B. Stoddard, vice-president of Charles River Associates. CLF, CPN, NRDC, and UCS (together, “CLF et al.”) sponsored the testimony of: (1) Paul L. Chernick, president of Resource Insight, Inc.; and

(2) Gary W. Yohe, Ph.D., professor of economics at Wesleyan University. DOER sponsored the testimony of Dwayne Breger, director of renewable and alternative energy development for DOER. Lowell Cogen sponsored the testimony of Timothy Fagan, director of asset management for Morris Energy Group, LLC. TransCanada sponsored the testimony of Michael E. Hachey, vice-president and director, eastern commercial for TransCanada Power Marketing, Ltd.

The Department held 13 days of evidentiary hearings between September 7, 2010 and September 24, 2010.³ On October 8, 2010, the following parties filed initial briefs: National Grid; AIM; Alliance; the Attorney General; Cape Wind; CLF et al.; the Compact; DOER; NEPGA; RESA;⁴ and TransCanada. On October 15, 2010, the following parties filed reply briefs: National Grid; AIM; Alliance; the Attorney General; Cape Wind; CLF et al.; the

³ For a detailed discussion of the procedural history in this matter, refer to the following: Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (July 13, 2010); Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (August 11, 2010); Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Revised Procedural Schedule and Hearing Officer Ruling on: (1) Motion of Cape Wind Associates, LLC to Modify Witness Testimony Dates; (2) Motion of Alliance to Protect Nantucket Sound for Rescheduling Witnesses; and (3) Motion of Attorney General to Amend Evidentiary Hearing Schedule and File Supplemental Testimony (August 20, 2010); Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Ruling on Motion of Alliance to Protect Nantucket Sound to: (1) Adjust the Procedural Schedule; or, alternatively (2) Strike the Supplemental Testimony of Attorney General (August 27, 2010); Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (September 16, 2010); and Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Memorandum (September 24, 2010).

⁴ On brief, RESA makes several arguments on issues that exceed the scope of RESA's limited grant of participation in this proceeding. D.P.U. 10-54, Hearing Officer Ruling on Intervention at 9, 16 (July 9, 2010) (allowing RESA to intervene on the issue of the proposed ratemaking treatment of PPA-1, including how the costs of the contracts will be recovered from basic service and distribution service customers). For example, RESA addresses National Grid's solicitation method, as well as the reasonableness of the size and cost-effectiveness of PPA-1 (RESA Brief at 3-5, 7-10). The Department will not consider RESA's specific arguments on these issues because they exceed the scope of RESA's permitted participation. To the extent that other parties have also raised these same arguments, the Department considers them herein.

Compact; DOER; and NEPGA. The evidentiary record consists of 838 exhibits and 20 responses to record requests.⁵

On October 8, 2010, Alliance filed a motion to reopen the record and admit additional evidence for consideration. On October 20, 2010, the Attorney General filed a motion to strike Appendix B from Alliance's initial brief as well as all references to Appendix B contained in the brief because it is one of the items that Alliance seeks to have admitted in its motion to reopen the record. On October 29, 2010, Alliance filed a second motion to reopen the record and admit additional evidence for consideration. All three motions and responses by parties are addressed in a separate interlocutory Order, issued today. Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10 54, Interlocutory Order on: (1) Motions of the Alliance to Protect Nantucket Sound to Reopen the Record; and (2) Motion of the Attorney General to Strike (November 22, 2010).

II. DESCRIPTION OF CAPE WIND FACILITY

A. General

The Cape Wind facility ("facility") is a proposed wind energy generating facility to be located in Horseshoe Shoal in Nantucket Sound, within federal waters (Exhs. NG-SFT

⁵ On September 24, 2010, National Grid, the Attorney General, Cape Wind, and Alliance jointly moved all exhibits and responses to record requests into the evidentiary record in this proceeding. The exhibits include: prefiled direct, supplemental, and rebuttal testimony of witnesses and any attachments, schedules, workpapers and/or exhibits to such testimony; revised or supplemental versions of exhibits; responses to information requests and any attachments; and documents offered at the evidentiary hearings. A number of exhibits were filed as confidential and granted protective treatment by the Department.

at 88-89; CW-DJD at 3-4, 17). The facility will consist of up to 130 wind turbine generators of 3.6 megawatts (“MW”) each, for a maximum project capacity of 468 MW (Exhs. NG-SFT at 88-89; CW-DJD at 3-4).⁶ The facility will include wind turbine generators, an electric service platform, and related cabling (Exh. CW-DJD at 4).

The electricity produced by the facility will be transmitted using two 115 kilovolt (“kV”) transmission lines, each 18 miles in length (Exhs. NG-SFT at 88-89; CW-DJD at 4). Once produced at the facility, the electricity will travel twelve miles underwater⁷ to reach land in Yarmouth, Massachusetts and then travel along six miles of underground and overhead 115 kV transmission lines within an NSTAR Electric transmission right-of-way (Exhs. NG-SFT at 89; CW-DJD at 4; DPU-CW-3-1(a)(Att. at 2)). The transmission lines will interconnect at an NSTAR Electric switching station in Barnstable, Massachusetts, where the electricity will enter the electric transmission grid (Exh. CW-DJD at 4).

B. Permitting and Regulatory Approvals

1. Federal Approvals

For over nine years, Cape Wind has sought and received federal permits, licenses, and approvals for the facility (Exhs. NG-SJT at 89; DPU-CW-7-28 (Att.)). On April 28, 2010, the secretary of the United States Department of the Interior issued a record of decision to Cape Wind, pursuant to which the Bureau of Ocean Energy Management, Regulation and

⁶ The maximum nameplate capacity of the facility will be 468 MW, subject to certain contingencies, as described below.

⁷ The transmission lines traverse federal waters from the facility, and enter Massachusetts territorial waters three miles from the shore (Exh. CW-DJD at 4).

Enforcement (“BOEMRE”)⁸ will offer Cape Wind a commercial lease and easement for the Outer Continental Shelf (Exh. CW-DJD at 4-5). On May 5, 2010, the Federal Aviation Administration determined that the facility posed no hazard to air navigation, pursuant to 14 C.F.R. Part 77 (Exh. CW-DJD at 5). Cape Wind still has several requests for federal permits pending, including one to the United States Army Corps of Engineers for a permit to work in navigable waters and wetlands, and another to the United States Environmental Protection Agency for a stormwater permit and an air permit (Exh. DPU-CW-7-29 (Att.)).

2. State and Local Approvals

On May 27, 2009, the Massachusetts Energy Facilities Siting Board (“EFSB”) issued a certificate of environmental impact and public interest, which grants to Cape Wind all state and local permits, licenses, and approvals required to construct the transmission lines in Massachusetts (Exhs. CW-DJD at 4; DPU-CW-7-28 (Att.)).⁹

C. Operating Characteristics

The amount of electricity that the facility will produce will be determined by the wind in the area of the facility (see Exhs. CW-DJD at 17; AG-CW-3-7). Cape Wind has been collecting wind data from its meteorological tower in Horseshoe Shoal since 2003

⁸ BOEMRE is the new name of the federal agency formerly called the United States Minerals Management Service.

⁹ The EFSB’s decision was recently affirmed by the Massachusetts Supreme Judicial Court in Alliance to Protect Nantucket Sound, Inc. et al. v. Energy Facilities Siting Bd., et al., 457 Mass. 663 (2010).

(Exh. AG-CW-3-7). AWS Truepower, a renewable energy consultant, has validated wind data through 2007 (Exh. AG-CW-3-7).¹⁰

Based on the validated wind data and assuming a 468 MW facility, Cape Wind estimates a capacity factor¹¹ of approximately: (1) 37.1 percent on an annual basis; (2) 29.4 percent during the summer months of June through September; and (3) 45 percent during the winter months of December through March (Exhs. CW-DJD at 17; NG-SJT at 89; AG-CW-3-7).¹² Based on a 468 MW facility, the Independent System Operator-New England

¹⁰ Cape Wind notes that data from 2008 and 2009 has not yet been validated and it describes the importance of a rigorous validation process to ensure the data is useful in predicting power output from the facility (Exhs. DPU-CW-1-5; AG-CW-3-7). According to Cape Wind, the validation process includes verification of primary and back-up instruments, checking against weather conditions that may indicate the use of one instrument over another, calculation of wind shear and extrapolation of wind speed from the highest two instruments to hub height (Exhs. DPU-CW-1-5; AG-CW-3-7). Cape Wind characterizes this validation as conservative, leaning toward rejecting data if there is some question about its validity (Exhs. DPU-CW-1-5; AG-CW-3-7).

¹¹ The Energy Information Administration (“EIA”) defines capacity factor as the ratio of the electrical energy produced by: (1) a generating unit for the period of time considered; to (2) the electrical energy that could have been produced at continuous, full power operation during the same period.
<http://www.eia.doe.gov/glossary/index.cfm?id=C>.

¹² The capacity factors here are based on estimated wind output for which the probability is 50 percent, referred to as P50 (Exh. NG-MNM at 21).

(“ISO-NE”) estimates that 462 MW¹³ will be the maximum power delivered, and AWS Truepower estimates that 409 MW (Tr. 3, at 610) will be the maximum power delivered.¹⁴

Cape Wind identifies the facility’s power production as highly coincident with the region’s winter and summer peak loads (Exh. CW-DJD at 17). Using validated data, Cape Wind estimates that the facility’s capacity factor would have averaged 76 percent during ISO-NE’s top ten historic peak hours, all of which occurred during the summer months (Exh. CW-DJD at 17).

III. DESCRIPTION OF PPA-1

A. Phases of the Facility

According to PPA-1,¹⁵ the facility must meet certain critical milestones, which include the commencement of construction by December 31, 2013, and a deadline for the commercial operation of all phases (“Commercial Operation Date”) of December 31, 2015 (PPA-1,

¹³ See Exh. APNS-CW-1-6 (att., New England 2030 Power System Study Report to the New England Governors, 2009 Economic Study: Scenario Analysis of Renewable Resource Development at 299 n. 2, citing http://www.iso-ne.com/genrtion_resrcs/nwgen_inter/status/interconnection_request_queue_11012010.pdf).

¹⁴ According to Cape Wind, the different estimates of the maximum power delivered are attributable to different estimates of line losses and situations in which the turbines, because of various conditions, are performing at less than rated output (Tr. 3, at 610).

¹⁵ This section describes the provisions included in PPA-1, as amended. The amendments were filed on August 9, 2010, pursuant to the Settlement Agreement between National Grid, Cape Wind, the Attorney General, and DOER (see Section IV, below). Where appropriate, the Department will indicate if a provision included in PPA-1 differs from PPA-1 as originally filed (“PPA-1 (original)”).

§ 3.1).¹⁶ All critical milestones are subject to the following extensions: (1) Cape Wind may extend the Commercial Operation Date for one year (i.e., through December 31, 2016) with no additional security; and (2) Cape Wind may further extend the Commercial Operation Date for two six-month periods (i.e., to June 30, 2017 and December 31, 2017) by posting additional security of \$1.17 million for each six-month period (PPA-1, § 3.1; Exh. NG-MNM at 13-14, 16).¹⁷

Pursuant to PPA-1, the facility may achieve commercial operation in phases if: (1) no phase is less than 28 MW of nameplate capacity; and (2) there are no more than 17 phases in total (PPA-1, § 3.3; Exh. NG-MNM at 13). Each phase of the facility will have a Partial Commercial Operation Date, which is the date that the phase is substantially completed and capable of regular commercial operation (PPA-1, § 3.3(b)).

B. Term of Contract

Under PPA-1, National Grid will be obligated to purchase power from each phase of the facility beginning on its Partial Commercial Operation Date for 15 years (PPA-1, §§ 2.2, 3.3; Exh. NG-MNM at 18).¹⁸ The term of PPA-1 will terminate 15 years after the

¹⁶ The provision on critical milestones for the facility establishes deadlines for: (1) receipt of all permits; (2) acquisition of property and site control; (3) closing of financing; (4) commencement of construction; and (5) Commercial Operation Date.

¹⁷ In addition, there is a force majeure provision that would allow for an additional one-year extension (i.e., through December 31, 2018) (PPA-1, § 10.1).

¹⁸ PPA-1 does not include a deadline for the first Partial Commercial Operation Date. Cape Wind estimates that its first turbine will be placed in service approximately 14 months after Cape Wind issues a notice to proceed to the contractor company that

Commercial Operation Date, which will be the date that all phases of the facility are substantially complete and capable of regular commercial operation (PPA-1, § 3.3; Exh. NG-MNM at 13).¹⁹

C. Types and Quantities of Contractual Products

Under PPA-1, Cape Wind will sell and deliver to National Grid three products associated with the output of the facility: (1) energy; (2) capacity; and (3) RECs (PPA-1, § 4.1; Exh. NG-MNM at 14). The facility has already been approved as a Massachusetts Renewable Energy Portfolio Standard (“RPS”) Class I Renewable Generation Unit (Exh. CW-DJD-3). PPA-1 provides National Grid with the right and obligation to purchase these products associated with 50 percent of the output of the facility, up to a contract maximum amount of 234 MW²⁰ (i.e., 50 percent of 468 MW) (PPA-1, § 4.1; Exh. NG-MNM at 14). This amount equals approximately 3.5 percent of National Grid’s distribution load in 2008 (Exh. NG-MNM at 14).

The quantity of products that National Grid is obligated to purchase may be adjusted based on changes that Cape Wind may make to the size of the proposed facility. Cape Wind may exercise the option to adjust its nameplate capacity twice during the term of PPA-1, but

will engineer and build the project, and Cape Wind’s objective is to be fully operational by December 31, 2012 (Exhs. DPU-CW-2-2; DPU-CW-7-34; Tr. 1, at 136).

¹⁹ At the expiration of the contract term, National Grid has the right to negotiate exclusively with Cape Wind for 60 days for the energy, capacity, and RECs of the facility (PPA-1, § 2.2(e)).

²⁰ PPA-1 uses the term “megawatthours per hour” to define the Company’s obligation. The Department used the term “MW” in its stead.

the nameplate capacity may not exceed 468 MW (PPA-1, § 4.10; Exh. NG-MNM at 4 (Supp.)).²¹ If Cape Wind elects to revise the nameplate capacity of the facility, National Grid's obligation to purchase the output is adjusted to the lesser of: (1) 234 MW; or (2) 80 percent of the revised nameplate capacity (PPA-1, § 4.10).²²

D. Pricing Structures

1. Introduction

National Grid will pay a bundled price for the three products under PPA-1 (PPA-1, exh. E; Exh. NG-MNM at 15). While the bundled price does not identify the cost of each item separately, for purpose of accounting National Grid will allocate the bundled price to the three component products in the following manner: (1) the capacity component is based on the Forward Capacity Market ("FCM") value (i.e., by converting the price from kilowatt months into megawatt-hours ("MWh"));²³ (2) the REC component price is based on REC prices as

²¹ Cape Wind may adjust the size of the facility 20 days after PPA-2 is terminated or the first Partial Commercial Operation Date occurs, whichever is earlier (PPA-1, § 4.10; PPA-2, § 8.5). Cape Wind may also revise the nameplate capacity under the PPA-1 pricing appendix prior to the Commercial Operation Date (PPA-1, exh. E, App. X, § 1.b).

²² The effect of this provision of PPA-1 is that National Grid will purchase 234 MW of output, unless the size of the facility is reduced to less than 292.5 MW, after which National Grid will be obligated to purchase 80 percent of the output of the smaller facility (Tr. 3, at 498-500).

²³ Although National Grid is purchasing an amount of capacity from Cape Wind, this cost will be reflected by reducing National Grid's monthly payments to Cape Wind by the FCM value of that amount of capacity (PPA-1, exh. E). The FCM is a market administered by ISO-NE, in which ISO-NE conducts annual auctions to procure the amount of capacity needed in New England. ISO-NE Tariff, Market Rule 1, § III.13; PPA-1, § 1 (Definitions).

published in the Chicago Climate Futures Exchange (“CCFE”);²⁴ and (3) the remainder is allocated to the energy component (PPA-1, exh. E; Exh. NG-MNM at 14-15, 17).

The pricing structure included in PPA-1 includes a Base Price, which may be adjusted as a result of multiple contingencies and are denominated: (1) Size-Adjusted Base Price; (2) Tax Credit-Adjusted Price; (3) Financing-Adjusted Price; and (4) Cost-Adjusted Price (PPA-1, exh. E, App. X). In addition, the adjusted price will be subject to an Escalation Factor and a Wind Outperformance Adjustment Credit (PPA-1, exh. E, App. X and Y).

2. Base Price

PPA-1 establishes a Base Price equal to \$187 per MWh for energy delivered in calendar year 2013 (“2013 Base Price”) (PPA-1, exh. E, App. X; Exh. NG-MNM at 3 (Supp.)).²⁵ The Base Price is the starting point for the Bundled Price, which is the lesser of: (1) the Base Price, as adjusted for size, tax credits and financing; and (2) the Cost Adjusted Price (PPA-1, exh. E, App. X). The Bundled Price increases annually based on the escalation factor discussed below (PPA-1, exh. E, App. X). The Bundled Price will be certified by a verification agent, or after any recalculations to the Bundled Price (PPA-1, exh. E, App. X, § 6).

²⁴ The CCFE is a marketplace for environmental derivatives, which are financial instruments whose underlying values are tradable assets. See CCFE website, <http://www.ccfef.com/ccfeContent.jsf?id=91308>.

²⁵ The original version of PPA-1 included a 2013 Base Price equal to \$207 per MWh (PPA-1 (original), exh. E, App. X; Exh. NG-MNM at 15).

3. Size-Adjusted Base Price

The price to be paid under PPA-1 may be adjusted based on changes to the size of the facility.²⁶ As stated above, the size of the facility may be adjusted twice. The 2013 Base Price (\$187 per MWh) will be adjusted upward if Cape Wind reduces its nameplate capacity below the 468 MW level, pursuant to PPA-1, § 4.10 (PPA-1, exh. E, App. X, § 1.b.). The Base Price will increase by \$0.0833 per MWh for each MW reduction in nameplate capacity below 468 MW (“2013 Size-Adjusted Base Price”), but the 2013 Size Adjusted Base Price cannot exceed \$193 per MWh (PPA-1, exh. E, App. X, § 1.a.; Exh. NG-MNM at 4 (Supp.)).

4. Tax Credit-Adjusted Price

After the Base Price is adjusted for the size of the facility, it may be further adjusted to reflect the facility’s eligibility for certain federal tax credits (“2013 Tax Credit-Adjusted price”).²⁷ PPA-1 assumes that the facility will be placed in service on a date on which the facility qualifies for both the federal Investment Tax Credit (“ITC”) and Production Tax Credit (“PTC”) (Exh. NG-MNM at 18). The 2013 Tax Credit-Adjusted Price will be determined by increasing the Size-Adjusted Base Price if the facility is not eligible for the ITC and PTC (PPA-1, exh. E, App. X, § 2; Exh. NG-MNM at 5 (Supp.)).²⁸ The 2013 Tax Credit-Adjusted

²⁶ This provision was not included in PPA-1 (original).

²⁷ The adjustments for the tax credits constitute 50 percent of the financial impact of the tax credits, and represent an equal sharing between Cape Wind and National Grid of the risk that the facility will not be eligible for the tax credits (Exh. NG-MNM at 19).

²⁸ The ITC and the PTC are tax credit incentive programs that enable a taxpayer (e.g., Cape Wind) to claim a tax credit upon completion of construction of a renewable energy project by December 31, 2012 (Exh. DPU-CW-2-8). The ITC allows a taxpayer to claim a 30 percent business credit for investment in renewable projects such

Price will be determined by increasing the Size Adjusted Base Price by a factor of 1.10145 if the facility qualifies for only the PTC and not the ITC (PPA-1, exh. E, App. X, § 2; Exh. NG-MNM at 5 (Supp.)). The 2013 Tax Credit-Adjusted Price will be determined by increasing the Size-Adjusted Base Price by a factor of 1.13526 if the facility qualifies for neither tax credit (PPA-1, exh. E, App. X, § 2; Exh. NG-MNM at 5 (Supp.)).²⁹

If the facility does not qualify initially for one or both of the federal tax credits but does so after the date that the facility is placed in service, the Tax Credit-Adjusted Price will be adjusted downward for the remainder for the term to reflect these credits (PPA-1, exh. E, App. X, § 2; Exh. NG-MNM at 18-19). Similarly, if the facility qualifies retroactively for one or both of the federal tax credits, the Tax Credit-Adjusted Price will be adjusted retroactively for the applicable period (PPA-1, exh. E, App. X, § 2; Exh. NG-MNM at 18).

as Cape Wind on a one-time basis (Exhs. DPU-CW-2-5; DPU-CW-2-6; DPU-CW-2-7). The PTC enables a taxpayer to claim a tax credit on electricity output for ten years after the facility's in-service date (Exh. DPU-CW-2-1). The Tax Credit-Adjusted Price provision is based on the facility's eligibility for the ITC or PTC, not whether Cape Wind claims the credits for the facility (PPA-1, exh. E, App. X, § 2).

²⁹ The adjustment for tax credit eligibility was included in PPA-1 (original), which called for the 2013 Base Price to increase to: (1) \$228 per MWh if the facility does not qualify for the ITC, but does qualify for the PTC; and (2) \$235 per MWh if the facility does not qualify for either tax credit (PPA-1 (original), exh. E, App. X; Exh. NG-MNM at 18-19). National Grid states that the tax adjustment factors included in the amended PPA-1 are calculated based on the values included in PPA-1 (original) (Exh. NG-MNM at 5 (Supp.)).

5. Financing-Adjusted Price

PPA-1 includes a mechanism to lower the price of the contract to reflect lower debt financing costs. The Tax Credit-Adjusted Price will be adjusted downward if Cape Wind obtains debt financing at an interest rate lower than 7.5 percent (PPA-1, exh. E, App. X, § 3; Exh. NG-MNM at 5-6 (Supp.)).³⁰ If realized, the reduced financing costs will flow to National Grid's ratepayers through lower prices from the contract in an amount equal to 75 percent of Cape Wind's reduced annual payment obligation (on an after-tax basis) for each year of the contract term for National Grid's entitlement portion, assuming a 35 percent tax rate (PPA-1, exh. E, App. X, § 3; Exh. NG-MNM at 5-6 (Supp.)).³¹ The Financing-Adjusted Price will be calculated once, at the time of the initial calculation of the Bundled Price (PPA-1, exh. E, App. X, § 3; Exh. NG-MNM at 5-6 (Supp.)).

6. Cost-Adjusted Price

PPA-1 includes a provision that reduces the price of the contract if Cape Wind's actual costs to construct the facility or projected operating expenses are less than originally projected (PPA-1, exh. E, App. X, § 4; Exh. NG-MNM at 6 (Supp.)). PPA-1 provides that the Bundled Price (i.e., the Base Price adjusted for size, tax credits and financing) will be adjusted

³⁰ Debt financing includes any indebtedness, including loans, note or bond issuances, convertible debt (prior to its conversion to equity), and/or sale leaseback transactions and any other financing that would be recorded as indebtedness under generally accepted accounting principles ("GAAP") in the United States (PPA-1, exh. E, App. X, § 3).

³¹ For example, if the weighted average interest rate of Cape Wind's debt financing is equal to five percent, with a 35 percent assumed tax rate, the benefits of this provision will be calculated as [(7.5 percent - 5.0 percent) x (1 - 35 percent) x (average monthly amount of debt financing in each year)] (PPA-1, exh. E, App. X, § 3).

downward if, at that price, Cape Wind's internal rate of return ("IRR") would exceed 10.75 percent (PPA-1, exh. E, App. X, § 4; Exh. NG-MNM at 6 (Supp.)).³² The Cost Adjusted Price will be equal to: (1) the Bundled Price that would yield a forecasted net revenue stream required to allow Cape Wind to earn a 10.75 percent IRR; plus (2) 40 percent of the amount by which the IRR exceeds the 10.75 percent (i.e., 60 percent of the benefits of this provision will flow to National Grid ratepayers) (PPA-1, exh. E, App. X, § 4; Exh. NG-MNM at 6 (Supp.)).³³

For this adjustment, IRR means the rate of return at which the present value of all payments made to Cape Wind for energy, capacity, and RECs³⁴ is equal to the present value of all known and reasonably forecasted facility operating costs over the service term (PPA-1, exh. E, App. X, § 4(b)).³⁵ The Cost Adjusted Price will be calculated once in connection with the

³² This provision was not included in PPA-1 (original).

³³ For example, if Cape Wind's IRR is projected to be 11.75 percent, the otherwise applicable Bundled Price would be adjusted downward so that the calculated IRR would be 11.15 percent (which is 10.75 percent plus 40 percent of the 1.00 percentage point by which Cape Wind's IRR exceeds 10.75 percent) (PPA-1, exh. E, App. X, § 4).

³⁴ The payments attributable to the products (energy, capacity and RECs) generated by the facility and sold by Cape Wind are the arithmetic mean of three forward price assessments of the products prepared by third-party experts (PPA-1, exh. E, App. X, § 4(c)).

³⁵ Costs in connection with the construction and operation of the facility will include: development costs; engineering, procurement and construction costs; costs to re-perform defective work and perform warranty work; sales and use taxes; insurance; taxes and other fees; interconnection costs; financing costs; and any capitalized costs of the facility (PPA-1, exh. E, App. X, § 4(a)). On the date that the Cost-Adjusted Price is determined, some costs will be known with certainty and others will have to be

initial calculation of the Bundled Price, except that if Cape Wind enters into an agreement to sell any portion of the output of the facility that is not already subject to a long-term contract within six months of the calculation of the Cost-Adjusted Price, then the verification agent must recalculate the Cost-Adjusted Price and the Bundled Price to reflect the new agreement (PPA-1, exh. E, App. X, § 4).

7. Escalation Factor

The Bundled Price escalates annually by a factor of 3.5 percent, with the first escalation date occurring on January 1, 2014 (PPA-1, § 5.1(b) and exh. E, App. X; Exh. NG-MNM at 15, 17). If the facility is placed into operation early and achieves a Partial Commercial Operation Date in 2012, the Bundled Price for products delivered in 2012 will be reduced by 3.5 percent (PPA-1, exh. E, App. X, § 7). The escalation factor will also be adjusted for extensions of the Commercial Operation Date (PPA-1, §§ 3.1(c), 5.1(b), 10.1; Exh. NG-MNM at 17). If the facility does not achieve its Commercial Operation Date by December 31, 2015, the escalation factor for that year will be delayed for the period of the extension, and there will be no further escalation (from the 2015 Base Price)³⁶ until the facility achieves its Commercial Operation Date (PPA-1, § 5.1(b); RR-DPU-NG-8).³⁷ There can be

estimated and then reviewed by the verification agent (RR-DPU-AG-1, citing PPA-1, exh. E, App. X, § 6).

³⁶ The price will escalate on January 1, 2014 and January 1, 2015 (RR-DPU-NG-8).

³⁷ While the quantity of power that National Grid is obligated to purchase and the length of time that National Grid is obligated to purchase that power (i.e., 15 years for each phase) depends on when each phase reaches its Partial Commercial Operation Date, the

no more than 17 escalation dates during the term of the contract and no more than 15 escalation dates after the first Partial Commercial Operation Date (PPA-1, § 5.1(b); Exh. NG-MNM at 17).

8. Wind Outperformance Adjustment Credit

PPA-1 includes a Wind Outperformance Adjustment Credit, which is a mechanism for sharing the benefits of any performance in the power production of the facility in excess of what is anticipated (PPA-1, exh. E, App. Y; Exh. NG-MNM at 20-21). If the facility exceeds its projected capacity factor of 37.1 percent in any year, the price paid for the surplus power will be reduced by 50 percent (PPA-1, exh. E, App. Y; Exh. NG-MNM at 20-21). The price reduction will appear as a credit for 50 percent of the surplus power sold to National Grid, and credits resulting from this mechanism will be calculated at the end of a contract year and applied to invoices in the next contract year (PPA-1, exh. E, App. Y; Exh. NG-MNM at 20-21).

E. Other Provisions of PPA-1

1. Option to Extend Contract

National Grid will receive a one-time option to extend PPA-1 beyond the initial 15-year term for a ten-year period (i.e., until the end of the expected 25-year life of the facility) (PPA-1, § 2.2(f); Exh. NG-MNM at 9 (Supp.)).³⁸ National Grid has a deadline (“Determination Date”) to exercise its option to extend the contract, which is defined as

price that National Grid pays for all power produced and delivered is the same in a particular year (RR-DPU-NG-8).

³⁸ This provision was not included in PPA-1 (original).

90 days before the 14-year anniversary of the date on which the first phase of the facility enters into commercial operation (i.e., the first Partial Commercial Operation Date) (PPA-1, § 2.2(f); Exh. NG-MNM at 9 (Supp.)). If National Grid exercises its option to extend the contract, a new price will be set (“Extension Price”) to enable Cape Wind to recover, over the ten-year extension period, any unrecovered construction costs and reasonably projected operating and maintenance costs, together with an IRR equal to the average rate of return of investments with comparable risk (“cost-plus pricing”) (PPA-1, § 2.2(f), and exh. E, App. X, § 5; Exh. NG-MNM at 9 (Supp.)).

Cape Wind must provide National Grid (and the Attorney General) with this Extension Price at least 180 days prior to the Determination Date (PPA-1, § 2.2(f), and exh. E, App. X, § 5; Exh. NG-MNM at 9 (Supp.)). Cape Wind must provide sufficient detail and supporting documentation of the Extension Price to permit the parties to verify and confirm all components of the price (PPA-1, exh. E, App. X, § 5). The Department will have 210 days following the Determination Date to approve the proposed extension or it will be null and void (PPA-1, § 2.2(f); Exh. NG-MNM at 9-10 (Supp.)).

2. Most Favored Nation Clause

The Most Favored Nation Clause of PPA-1 would apply if Cape Wind enters into a new agreement with another counter-party for the purchase and sale of the remaining output of the facility. Before entering into such an agreement with another party, the Most Favored Nation Clause requires Cape Wind to first: (1) allow National Grid to revise PPA-1 to incorporate the terms of the new agreement if the term of the new agreement is for one year or

longer; or (2) offer to enter into a new agreement with National Grid on the same terms and conditions as the new agreement if the new agreement is for less than one year (PPA-1, § 4.1(e); Exh. NG-MNM at 10 (Supp.)).³⁹ National Grid will have 20 days to accept or reject Cape Wind's offer, and the Department will have 180 days to approve any new agreement or amendment (PPA-1, § 4.1(e)). Additionally, if Cape Wind constructs additional offshore wind energy generating facilities in Massachusetts coastal waters or adjacent federal waters (within 50 miles of the facility), National Grid has the right to negotiate exclusively with Cape Wind for 60 days for the energy, capacity, and RECs of that project (PPA-1, § 4.1(f)).

IV. OFFER OF SETTLEMENT

A. Summary of Settlement

On August 4, 2010, the Settling Parties filed a Joint Motion, a Settlement, and an explanatory statement regarding the Settlement.⁴⁰ The Joint Motion requests that the Department approve the Settlement in its entirety by November 30, 2010 (Joint Motion at 1). The Joint Motion further requests that the Department find that the terms of the Settlement are reasonable and in the public interest, and that the Department approve the PPAs as amended, pursuant to Section 83 (Joint Motion at 1-2).

The Settlement explains that the Settling Parties wish to resolve disputes regarding various terms contained in the proposed PPAs, including but not limited to the price terms of

³⁹ This provision of PPA-1 expands the Most Favored Nation Clause included in PPA-1 (original) (Exh. NG-MNM at 10 (Supp.)).

⁴⁰ On July 30, 2010, the Settling Parties filed a Settlement, including a Term Sheet that outlined the terms to which the Settling Parties agreed in principle.

the PPAs as well as the relationship of the price terms to projected construction, and operations and maintenance (“O&M”) costs associated with the project (Settlement at 2). The Settlement states that the Settling Parties intend to resolve issues regarding discovery disputes, the terms of the proposed PPAs, and approval of the PPAs as amended (Settlement at 2).

The Settlement primarily addresses the price terms of the PPAs (Exh. NG-MNM at 2 (Supp.)). The Settlement amends the PPAs as follows: (1) lowers the base price of both PPAs, and includes price adjustments if the size of the facility changes or if the facility is not eligible for the PTC or ITC; (2) includes a price adjustment for both PPAs if Cape Wind can secure lower debt financing costs; (3) includes a price adjustment for both PPAs if the actual costs to finance and construct the project are less than originally projected; (4) revises PPA-2 for consistency with PPA-1, so that the Department need not review PPA-2 terms in a future proceeding; (5) adds an option to extend both PPAs at cost-plus pricing at the end of the contract term; and (6) expands the most favored nation clause of PPA-1 (Settlement at 3-7).⁴¹

The Settlement requires the Attorney General to withdraw her motion to compel (Settlement at 7).⁴² In addition, the Settlement contains a number of conditions. The Settlement is conditioned on approval in full by the Department, and provides that if not approved in its entirety by the Department by November 30, 2010, the filing shall be deemed to be withdrawn (Settlement at 8-9). The Settlement is also conditioned upon promises among

⁴¹ See Section III, above, for a full description of the terms of PPA-1, as amended.

⁴² On August 9, 2010, the Attorney General withdrew her motion to compel.

the Settling Parties relating to the settlement negotiations as well as preexisting Department policy on settlements (Settlement at 7-10).

On August 9, 2010, the Settling Parties filed amendments to PPA-1 and PPA-2, supplemental testimony on the amendments, an updated bill impact analysis, updated calculations of above-market costs, and a recommendation letter from the Attorney General (“Attorney General Recommendation”). The Attorney General states that the amended PPAs provide tangible ratepayer benefits over the original PPAs and therefore recommends that the Department approve the Settlement and the PPAs, as amended, in their entirety, as they are in the public interest (Attorney General Recommendation at 1-2). On August 9, 2010, Alliance filed an answer to the Joint Motion (“Alliance Answer”), asking the Department to deny the Joint Motion because the concessions made by Cape Wind in the proposed Settlement fall short of what would be required to make the PPAs cost-effective and compliant with Section 83 of the Green Communities Act and other applicable laws (Alliance Answer at 1). In addition, Alliance urges the Department to reject the Settling Parties’ attempts to impose an artificial deadline on the proceeding by providing that the Settlement will be withdrawn if not approved in its entirety by November 30, 2010 (Alliance Answer at 2-3).

B. Discussion

In the Joint Motion, the Settling Parties ask the Department to find that the terms of the Settlement Agreement are reasonable and in the public interest.⁴³ Pursuant to the Department’s

⁴³ The Attorney General’s brief also provides the standard of review for settlements and seeks approval of the Settlement itself (Attorney General Brief at 9, 35-37).

standard of review, in assessing the reasonableness of an offer of settlement, the Department reviews all available information to ensure that the settlement is consistent with Department precedent and the public interest. See Fall River Gas Company, D.P.U. 96-60 (1996); Essex County Gas Company, D.P.U. 96-70 (1996); Boston Edison Company, D.P.U. 92-130-D, at 5 (1996); Bay State Gas Company, D.P.U. 95-104, at 14-15 (1995); Boston Edison Company, D.P.U. 88-28/88-48/89-100, at 9 (1989).

The Department finds that there is no need to review the Settlement separately from the PPAs as amended. First, the Settlement is not dispositive of all matters in this docket. The Settlement replaces certain terms in the PPAs and adds new terms. While the Settlement may resolve issues among the Settling Parties (Settlement at 3, § 1.2), it does not resolve all issues under consideration in this docket.⁴⁴ In addition, the Settling Parties do not include all parties to this proceeding, nor do they represent the points of view of all parties. Other parties have advocated positions that clearly differ from those embodied in the Settlement. Due process requires that the Department provide all parties an opportunity to be heard. G.L. c. 30A, §§ 10, 11.

Second, the Settlement and amended PPAs were filed prior to the conclusion of discovery and the commencement of hearings in this matter and, therefore, parties had a full opportunity to investigate the PPAs as amended. Because the Settling Parties incorporated the

⁴⁴ Indeed, there is no evidence that the Settling Parties expect that the Settlement would resolve and conclude this investigation.

substantive terms of the Settlement into formal amendments to PPA-1 and PPA-2 (Settlement at 9, § 3.7), these terms are subsumed in the Department's review of the PPAs.

Finally, the Settling Parties urge the Department to review the terms contained in the Settlement in the context of our review of the PPAs. On brief, the Settling Parties request the Department to make findings that the PPAs, as amended, and taken as a whole, are both reasonable and cost-effective under Section 83 (see National Grid Brief at 15, 35-36; DOER Brief at 2-3; Cape Wind Brief at 13-14; Attorney General Brief at 25, 27).

The scope of this proceeding is the Department's review of the PPAs under Section 83. As stated above, the terms of the Settlement as reflected in the amended PPAs are subject to this Section 83 review, and all parties have had an opportunity to review the amended PPAs in the course of this proceeding. As part of its review of the PPAs, the Department will assess the reasonableness of the PPAs, and whether the PPAs taken as a whole are consistent with the public interest. Thus, as a practical matter, the Department's review of the PPAs in this proceeding will include the elements of the Settlement. Therefore, the Department will address the Settling Parties' request to approve the Settlement as part of our disposition of the amended PPAs. Accordingly, the Department determines that there is no need to issue a separate ruling on the Joint Motion.

V. STANDARD OF REVIEW

Section 83 of the Green Communities Act requires each electric distribution company to enter into cost-effective long-term contracts to facilitate the financing of renewable energy generation, subject to the review and approval of the Department. See also 220 C.M.R.

§ 17.01(1). Thus, as an initial matter, an electric distribution company must demonstrate that the long-term contract facilitates the financing of the renewable energy generating source to which the contract applies.⁴⁵ St. 2008, c. 169, § 83.

In addition, Section 83 and the Department's applicable regulations set forth specific findings that the Department must make in order to approve a long-term contract for renewable energy generation. In particular, pursuant to Section 83 and 220 C.M.R. § 17.05(1), the Department must determine that the renewable energy generating source: (1) provides enhanced electricity reliability within the Commonwealth; (2) contributes to moderating system peak load requirements; (3) is cost-effective to Massachusetts electric ratepayers over the term of the contract; and (4) where feasible, creates additional employment. The Department must take into consideration both the potential costs and benefits of such contracts and approve a contract only upon a finding that it is a cost-effective mechanism for procuring renewable energy on a long-term basis. St. 2008, c. 169, § 83; 220 C.M.R. § 17.05(1).

Additionally, the public interest constitutes an overarching consideration in the Department's fulfillment of its regulatory and ratemaking duties. Attorney General v. Dep't of Telecomm. & Energy, 438 Mass. 256, 268 (2002); see also Wolf v. Dep't of Pub. Utils., 407 Mass. 363, 369 (1990) (the "mission of the [Department] is to regulate in the public interest"). Accordingly, in our review of long-term contracts for renewable energy generation under

⁴⁵ To be an eligible renewable energy generating source, Section 83 requires that the generator: (1) have a commercial operation date, as verified by DOER, on or after January 1, 2008; and (2) be qualified by DOER as eligible to participate in the RPS program and sell RECs under the program, pursuant to G.L. c. 25A, § 11F. See also 220 C.M.R. § 17.05(1).

Section 83, the Department will also consider whether the contract is in the public interest.⁴⁶

D.P.U. 09-138, at 12. The Department will further consider whether the associated cost recovery method is in the public interest and will result in just and reasonable rates pursuant to G.L. c. 164, § 94. D.P.U. 09-138, at 12; see also 438 Mass. at 264 n.13; Boston Edison Company/ComEnergy Merger, D.T.E. 99-19, at 8 (1999) (citing Mass. Oilheat Council v. Dep't of Pub. Utils., 418 Mass. 798, 804 (1994); Boston Real Estate Bd. v. Dep't of Pub. Utils., 334 Mass. 477, 495 (1956)).

VI. THRESHOLD REQUIREMENTS

A. Commercial Operation Date and RPS Qualification

Pursuant to Section 83 and 220 C.M.R. § 17.05(1), the Department must make two threshold determinations on the eligibility of the Cape Wind facility. To be an eligible renewable energy generating source, the facility must: (1) have a commercial operation date, as verified by DOER, of January 1, 2008 or after; and (2) be qualified by DOER as eligible to participate in the RPS program and sell RECs under the program, pursuant to G.L. c. 25A, § 11F. See also 220 C.M.R. § 17.05(1).

⁴⁶ Pursuant to G.L. c. 164, § 94A (“Section 94A”), an electric or gas distribution company must obtain Department approval to enter into a contract for the purchase of electricity or gas covering a period in excess of one year. The Department has construed our approval under Section 94A to require a determination that the contract is consistent with the public interest. See, e.g., NSTAR Electric Company, D.P.U. 07-64-A at 58 (2008); New England Electric System/Nantucket Electric Company, D.P.U. 95-67, at 21-22 (1995), citing New England Power Company, D.P.U. 1204 (1982). The Department’s public interest review in this proceeding will therefore satisfy the review otherwise performed under Section 94A.

It is undisputed that the facility satisfies these two requirements. The facility is not currently in operation and expects to begin operation in late 2012; therefore, it will have a commercial operation date of January 1, 2008 or after (Exh. CW-DJD-1, at 13). As to RPS eligibility, the record indicates that on December 23, 2009, DOER approved Cape Wind's application to qualify as an RPS Class I renewable generating unit pursuant to 225 C.M.R. § 14.05 (Exhs. CW-DJD-1, at 13; CW-DJD-3). Therefore, the Department finds that the Cape Wind facility satisfies the commercial operation date and RPS eligibility requirements of Section 83 and 220 C.M.R. § 17.05(1).

B. Solicitation Method

1. Introduction

In this section, the Department considers whether the solicitation method used by National Grid in entering into the contracts with Cape Wind complied with Section 83 and any other applicable statutes and Department precedent. See, e.g., 220 C.M.R. § 17.00 et seq.

2. Positions of the Parties

a. National Grid

National Grid contends that it complied with the express language of Section 83 in pursuing individual negotiations with Cape Wind (National Grid Reply Brief at 11-12). National Grid argues that Section 83 requires distribution companies to solicit proposals from renewable energy developers twice in five years but does not limit the manner of solicitation or mandate a single method of solicitation such as a request for proposals ("RFP") (National Grid Brief at 5). The Company argues that the plain language of Section 83, ¶ 2, which states that the distribution company "shall select a reasonable method of soliciting proposals from

renewable energy developers, which may include public solicitations, individual negotiations or other methods[,]’” provides the distribution company with discretion to decide on the solicitation method (National Grid Brief at 5; National Grid Reply Brief at 5-6). According to the Company, the only non-discretionary requirement is that the distribution company consult with DOER regarding its “ ‘choice’ ” of solicitation method (National Grid Brief at 5, quoting St. 2008, c. 169, § 83, ¶ 2). National Grid maintains that it not only complied with Section 83 but went one step further in seeking and obtaining Department approval of its decision to engage in individual negotiations with Cape Wind (National Grid Brief at 5, citing D.P.U. 09-138; National Grid Reply Brief at 12).

The Company also notes that, although it was not obligated to do so, it participated in the statewide solicitation process⁴⁷ and considered the bids received through the Initial RFP in

⁴⁷ On December 29, 2009, the Department initially approved the timetable and method of solicitation for a statewide solicitation process submitted jointly by the Massachusetts electric distribution companies and DOER in Fitchburg Gas and Electric Light Company et al., D.P.U. 09-77 (2009). This statewide solicitation process employed an RFP (“Initial RFP”) that contained the geographic limitation set out in Section 83 and was, thus, limited to eligible in-state bidders. The electric distribution companies issued the Initial RFP on January 15, 2010, and received bids on February 19, 2010. D.P.U. 09-77, RFP Filing, at 16; Tr. 2, at 343, 450. On June 9, 2010, the Department issued an Order which, among other things, suspended the applicability of the geographic limitation in accordance with Section 83 and adopted emergency regulations amending the Department’s Section 83 long-term contracts regulations. Investigation by the Department of Public Utilities on its Own Motion Commencing a Rulemaking Pursuant to G.L. c. 30A, § 2 and 220 C.M.R. §§ 2.00 et seq. Revising 220 C.M.R. §§ 17.00 et seq., D.P.U. 10-58, at 5 (2010). The Department also directed that the Initial RFP, which was then closed, be opened for a reasonable period of time to allow eligible out-of-state bidders to submit proposals. D.P.U. 10-58, at 6. On July 14, 2010, consistent with the Department’s directives and emergency regulations, the electric distribution companies and DOER jointly filed a request for approval of a revised RFP (“Revised RFP”), which the Department approved in

deciding whether to contract with Cape Wind (National Grid Brief at 5-6, 34-35; National Grid Reply Brief at 10-11, 13).

Although not specifically in the context of the appropriateness of its solicitation method, National Grid also responds to the arguments of NEPGA and AIM that G.L. c. 164, § 94A (“Section 94A”) ⁴⁸ applies in this proceeding (National Grid Reply Brief at 4-5). National Grid contends that Section 83 is a stand-alone statute that the Legislature enacted as part of a comprehensive energy policy reform in the Commonwealth, and that Section 83 directs and authorizes each distribution company to solicit proposals and enter into contracts under specific conditions and review standards (National Grid Reply Brief at 4). National Grid asserts that Section 94A does not impose any contracting requirements on distribution companies but, rather, is a general statute enacted to ensure that long-term contracts do not become effective without Department approval (National Grid Reply Brief at 4-5). Because Section 83 mandates that distribution companies enter into contracts and Section 94A imposes no such requirement, National Grid argues that Section 94A approval is not required for contracts proposed pursuant to Section 83 (National Grid Reply Brief at 5). National Grid further argues that Section 83

Fitchburg Gas and Electric Light Company, d/b/a Unitil et al., D.P.U. 10-76, at 1, 34-35 (2010). The distribution companies, including National Grid, issued the Revised RFP on September 2, 2010 for a period of 35 days to allow eligible bidders, from inside and outside the Commonwealth, to submit or refresh bids.

⁴⁸ Section 94A provides, in pertinent part, “No gas or electric company shall hereafter enter into a contract for the purchase of gas or electricity covering a period in excess of one year without the approval of the [D]epartment”

contains a provision⁴⁹ that contemplates circumstances in which distribution companies may propose long-term contracts that are not mandatory under Section 83 and that would need Department approval under Section 94A (National Grid Reply Brief at 5).

b. Cape Wind

Cape Wind argues that Section 83 explicitly permits bilateral negotiations outside of an RFP process (Cape Wind Reply Brief at 23). Cape Wind notes that the Department authorized bilateral negotiations between the Company and Cape Wind in D.P.U. 09-138, and specifically found that “the use of individual negotiations is expressly authorized in Section 83 National Grid’s proposal provides a reasonable method of soliciting and potentially executing a long-term contract for renewable energy” (Cape Wind Reply Brief at 23, quoting D.P.U. 09-138, at 11). Cape Wind also argues that because the Department’s decision in D.P.U. 09-138 is consistent with Section 83 and no party appealed that decision, the Department should afford this issue no further attention (Cape Wind Reply Brief at 23).

c. Attorney General

The Attorney General contends that the plain language of Section 83 allows for a variety of solicitation methods, including individual negotiations, and notes that the Department approved National Grid’s request to negotiate individually with Cape Wind in D.P.U. 09-138 (Attorney General Brief at 5, 30; Attorney General Reply Brief at 13-14). The Attorney General recommends, however, that the Department not authorize bilateral

⁴⁹ “The provisions of this section shall not limit consideration of other contracts for RECs or power submitted by a distribution company for review and approval by the [Department].” St. 2008, c. 169, § 83, ¶ 9.

negotiations under Section 83 in the future (Attorney General Brief at 30-31; Attorney General Reply Brief at 14 n.6). The Attorney General argues that the fact that she was able to negotiate a lower-priced contract through the settlement process reveals flaws in the use of bilateral negotiations (Attorney General Brief at 31). The Attorney General favors competitive solicitations and recommends that contracts that are not competitively procured undergo heightened review in the future (Attorney General Brief at 31).

The Attorney General also argues that the Department should reject NEPGA's recommendation that the contracts be dismissed without prejudice for the following reasons: (1) NEPGA's arguments amount to an untimely request for reconsideration of D.P.U. 09-138; (2) neither Section 83 nor D.P.U. 09-138 required National Grid to solicit multiple bids before entering into the contracts with Cape Wind; (3) Department precedent on competitive procurement is not applicable to individual negotiations entered into pursuant to Section 83; and (4) National Grid's solicitation process did not need to comply with the statewide solicitation process because the Department approved the use of individual negotiations in lieu of competitive solicitation (Attorney General Reply Brief at 14-15).

d. Alliance to Protect Nantucket Sound

Alliance contends that the Department has two options in this case: (1) to require long-term contracts be procured competitively, thereby enabling the Commonwealth to meet its policy goals in the most cost-effective manner; or (2) to allow distribution companies to "cherry pick" suppliers without regard to whether the contracts are reasonable (Alliance Reply Brief at 7, citing Tr. 7, at 1620-1621). Alliance argues that Section 83's provision that allows

distribution companies to receive four percent remuneration provides companies with a perverse incentive to enter into costly contracts (Alliance Reply Brief at 7). In contrast, Alliance notes, the Legislature's intent to encourage competition can be discerned in the statutory requirement that distribution companies to conduct at least two public solicitations over a five-year period (Alliance Reply Brief at 7).

Alliance next argues that National Grid did not select Cape Wind based on a fair and objective procurement process (Alliance Brief at 15-16). Alliance contends that National Grid did not compare Cape Wind to alternative projects and instead has pressed the Department to approve the contracts based on unfounded claims of urgency associated with Cape Wind's qualification for tax credits (Alliance Brief at 6 & n.10, 15-16). Alliance states that National Grid reached an agreement in principle with Cape Wind even before it received bids in response to the Initial RFP and also without regard to whether lower-priced renewable projects would bid into the Revised RFP (Alliance Brief at 7, 16, citing, e.g., Tr. 2, at 344, 358, 392, 450-451). Alliance also asserts that National Grid's suspension of its review of bids from the Initial RFP may suggest preferential treatment of particular bidders, and that Department approval of the PPAs would deter participation in the statewide solicitation process going forward (Alliance Brief at 16, 40).

e. CLF et al.

CLF et al. argue that Section 83 explicitly allows individual negotiations and does not mandate the use of competitive bidding (CLF et al. Reply Brief at 4). Noting the Department's Order in D.P.U. 09-138, CLF et al. agree with Cape Wind and the Attorney General that

challenging the use of individual negotiations is in effect a request for reconsideration of D.P.U. 09-138 that is barred by collateral estoppel (CLF et al. Brief at 10; CLF et al. Reply Brief at 4, 6 & n.6, citing Stowe v. Bologna, 415 Mass. 20, 22 (1993); Martin v. Ring, 401 Mass. 59, 62-64 (1987)). CLF et al. further argue that NEPGA's reliance on NSTAR Electric Company, D.P.U. 07-64-A (2008), to support its argument that Section 83 requires competitive solicitation is misplaced because Section 83, which authorizes the use of individual negotiations, was enacted after the Department's Order in D.P.U. 07-64-A (CLF et al. Reply Brief at 5). Finally, CLF et al. state that the Department should not hesitate to allow individual negotiations in the future, as argued by the Attorney General, because Section 83 strikes a careful balance between allowing the use of individual negotiations and empowering the Attorney General to play a meaningful role in ensuring that any proposed contracts are consistent with Section 83 (CLF et al. Reply Brief at 6).

f. Department of Energy Resources

DOER argues that National Grid's solicitation procedure fully complies with Section 83 and 220 C.M.R. § 17.04(1), which explicitly provide for individual negotiations (DOER Brief at 6 & n.7). DOER also notes that National Grid coordinated with DOER on its solicitation of a proposal from Cape Wind and received Department approval of the method and timetable of the solicitation in D.P.U. 09-138 (DOER Brief at 6 & n.8).

Although not specifically in the context of the appropriateness of National Grid's method of solicitation, DOER also responds to the arguments of NEPGA and AIM that Section 94A applies in this proceeding (DOER Reply Brief at 2-3). DOER argues that it is

clear from the careful drafting of a specific and unique standard for approval in Section 83 that the Legislature intended Section 83 to provide the sole standard for review of long-term contracts for renewable energy (DOER Reply Brief at 2-3). Moreover, DOER argues that because Section 94A does not actually contain any statutory standard, applying the Section 83 standard will not displace a standard in Section 94A such that the two statutes cannot be reconciled (DOER Reply Brief at 3). DOER states that, in fact, the two statutes can be harmonized: the Section 83 standard applies and Department approval under Section 83 satisfies any applicable requirements of Section 94A (DOER Reply Brief at 3 & n.4). DOER further notes that even assuming for the purpose of argument that Section 94A is inconsistent with Section 83, the inconsistent aspects of Section 94A are displaced by the newer and more specific Section 83 (DOER Reply Brief at 3, citing Saccone v. State Ethics Comm'n, 395 Mass. 326, 332 (1985); Mirageas v. Mass. Bay Transport. Auth., 391 Mass. 815, 819 (1984)).

g. Associated Industries of Massachusetts

AIM argues that Section 83 requires distribution companies to perform at least two solicitations before entering into any long-term contract (AIM Brief at 8-9). AIM also contends that the Legislature intended a distribution company to conduct a competitive RFP as a first step before considering any contract under Section 83 (AIM Brief at 9). AIM states that, regardless of whether the two required solicitations are by way of an RFP process or bilateral negotiation, a distribution company must conduct at least two solicitations in order to comply with the statutory requirements (AIM Brief at 9, 10).

Next, AIM notes that National Grid participated in the Initial RFP but later suspended that process and is also participating in the Revised RFP but claims it has no obligation to do so (AIM Reply Brief at 14). AIM argues that National Grid cannot have it both ways — that is, to participate in the statewide solicitation process and then pursue individual negotiations outside of that process under terms that are not consistent with the RFP (AIM Reply Brief at 16). AIM argues that in order to maintain the integrity of the RFP process the Department should require distribution companies that negotiate long-term contracts outside of an RFP to comply with the basic requirements of the statewide solicitation process such that: (1) the procurement be limited to 1.5 percent of the distribution company's load; and (2) the solicitation process be both (a) open to all renewable energy developers that meet the expanded geographical requirements of D.P.U. 10-58, at 5, and (b) subject to the review process articulated in the statewide solicitation (AIM Reply Brief at 14; see also AIM Brief at 16-17). AIM states that such an approach is important from a public policy perspective because it would ensure that Section 83 long-term contracts are the result of an open and transparent, arm's length negotiation and that the cost of such contracts is driven as low as possible through competition (AIM Reply Brief at 15).

Specifically with regard to National Grid, AIM argues that the Department should make a threshold inquiry into whether Cape Wind submitted any bids in response to the Initial RFP (AIM Brief at 18). AIM asserts that Section 83's allowance of the use of bilateral negotiations was not intended to allow utilities to engage developers who have not submitted bids into the statewide solicitation, and that bilateral negotiations should be dismissed as a show of bad faith

if the developer did not respond to the Initial RFP (AIM Brief at 18). AIM argues that if Cape Wind did respond to the Initial RFP, National Grid must show that it reviewed the bid in accordance with the evaluation and selection criteria of the statewide solicitation (AIM Brief at 18).⁵⁰

h. New England Power Generators Association

NEPGA argues that the Department should reject the contracts because National Grid did not undertake a reasonable, open, and competitive solicitation process in accordance with longstanding Department precedent concerning Section 94A and G.L. c. 164, § 1B(d) (“Section 1B(d)”) ⁵¹ (NEPGA Brief at 2 & n.4, 6, 9, 14, citing D.P.U. 07-64-A at 59-61; NEPGA Reply Brief at 2 & n.3, 3). NEPGA contends that National Grid failed to undertake a quantitative analysis or project-by-project evaluation, which would have compared the price and non-price attributes of the Cape Wind facility to other projects (NEPGA Brief at 7). NEPGA states that National Grid instead chose to solicit only one bid through an individual negotiation based on the Cape Wind facility’s alleged unique attributes, despite the fact that projects comparable to the Cape Wind project might have been available (NEPGA Brief at 7-9 & 8 n.10, citing, e.g., Tr. 4, at 886; D.P.U. 07-64-A at 59-61). NEPGA also claims that

⁵⁰ AIM further argues that if the Department approves the PPAs, the Company will not be able to enter into additional long-term contracts pursuant to the Revised RFP because it would have already satisfied its three percent procurement requirement (AIM Reply Brief at 16). The Department addresses AIM’s argument as to whether Section 83 imposes a three percent procurement cap in Sections VIII and X, below.

⁵¹ Section 1B(d) provides, in pertinent part, “The distribution company shall procure [basic] service through competitive bidding”

National Grid's unilateral negotiation with Cape Wind did not comply with historically approved methods of solicitation, which involved multiple solicitations and bids by multiple parties (NEPGA Brief at 15, citing D.P.U. 07-64-A at 60-61; NEPGA Reply Brief at 5).

Next, NEPGA argues that National Grid's solicitation process did not comply with the clear and unambiguous language of Section 83, which requires the solicitation of multiple proposals before entering into a long-term contract (NEPGA Brief at 12, 14; NEPGA Reply Brief at 2). NEPGA states that while Section 83 was designed to allow for flexibility in the solicitation of multiple, reasonable proposals, Section 83 does not allow for the individual negotiation of one proposal (NEPGA Brief at 11-12). For these reasons, NEPGA argues that the Department should dismiss National Grid's petition without prejudice and allow consideration of the contracts following a solicitation that complies with Section 83 (NEPGA Brief at 14; NEPGA Reply Brief at 7).

In addition, NEPGA argues that National Grid's solicitation was inconsistent with the requirements of the statewide solicitation process that the Department approved in D.P.U. 09-77, which fully complied with Section 83 and Department precedent (NEPGA Brief at 16, citing D.P.U. 09-77, at 20-21). NEPGA contends that National Grid's reliance on the non-price attributes of the Cape Wind project to justify entering into the contracts was inconsistent with the design and implementation of the statewide solicitation, which weighed price factors 80 percent and non-price factors only 20 percent (NEPGA Brief at 20-21). In order to ensure open and competitive solicitations in the future, NEPGA recommends that the Department require companies that individually negotiate to comply not only with Section 83

and Department precedent but also with the salient elements of the statewide solicitation process (NEPGA Brief at 17, 21).

3. Analysis and Findings

a. Section 83

Several parties have argued that Section 83 requires a distribution company to conduct two separate solicitations before entering into a long-term contract pursuant to Section 83 (AIM Brief at 9; NEPGA Brief at 11-12, 14; see Alliance Reply Brief at 7). Some parties have also argued that Section 83 requires a competitive solicitation process (AIM Brief at 9; Alliance Reply Brief at 7).

The Legislature prescribed in unambiguous language the methods of soliciting proposals for long-term contracts for renewable energy under Section 83. Section 83, ¶¶ 1 and 2 state in pertinent part:

Commencing on July 1, 2009, and continuing for a period of [five] years thereafter, each distribution company . . . shall be required twice in that [five] year period to solicit proposals from renewable energy developers and, provided reasonable proposals have been received, enter into cost-effective long-term contracts Distribution companies may also voluntarily solicit additional proposals over the [five] year period. The timetable and method for solicitation and execution of such contracts shall be proposed by the distribution company in consultation with [DOER] and shall be subject to review and approval by the [Department]

The electric distribution company shall select a reasonable method of soliciting proposals from renewable energy developers, which may include public solicitations, individual negotiations or other methods. . . . The distribution company shall consult with [DOER] regarding its choice of contracting methods and solicitation methods

This language explicitly addresses the manner for distribution companies to solicit proposals for Section 83 long-term contracts for renewables and does not limit the distribution

company to any particular method of solicitation. In fact, the statutory language directing that the distribution company “shall select a reasonable method of soliciting proposals” expressly provides the company with the discretion to choose a solicitation method, subject to the requirement that it consult with DOER and obtain Department approval of the timetable and method of solicitation.⁵² St. 2008, c. 169, § 83, ¶ 2; see also 220 C.M.R. §§ 17.04(1), (4). The statute further enumerates a number of possible methods of soliciting proposals including “public solicitations, *individual negotiations* or other methods.” St. 2008, c. 169, § 83, ¶ 2 (emphasis added); see also 220 C.M.R. § 17.04(1). This language clearly contemplates both individual negotiations and a competitive solicitation process, such as an RFP, as appropriate means of procuring contracts under Section 83. D.P.U. 09-138, at 11. Therefore, based on the plain language of the statute, the Department finds that National Grid’s individual negotiation with Cape Wind satisfies the solicitation requirements of Section 83. See Pyle v. Sch. Comm. of Hadley, 423 Mass. 283, 285-286 (1996) (“Where the language of a statute is clear and unambiguous, it is conclusive as to legislative intent.”). Furthermore, in D.P.U. 09-138, at 12, the Department approved National Grid’s request to engage in individual negotiations with Cape Wind outside of the statewide solicitation and found it consistent with Section 83 and 220 C.M.R. § 17.00 et seq.⁵³

⁵² There is no dispute that National Grid consulted with DOER regarding its choice of contracting methods and solicitation methods, and obtained Department approval of the timetable and method of solicitation in D.P.U. 09-138, at 11-12.

⁵³ The Department notes that D.P.U. 09-138 provided for a comment period on National Grid’s Memorandum of Understanding (“MOU”) with Cape Wind, which set forth a proposed timetable and method by which National Grid would solicit a proposal from

With regard to whether a distribution company is required to conduct two solicitations prior to entering into a contract, or whether a distribution company must participate in a competitive solicitation or solicitations prior to undertaking an individual negotiation, again the statute is clear. Section 83, ¶ 1 states that the distribution company shall solicit proposals twice over five years and “provided reasonable proposals have been received, enter into cost-effective long-term contracts” Because the statutory language does not contain a temporal nexus between the two solicitations and the entering of contracts, the Department will not read any such requirement into the statute. Global Naps, Inc. v. Awiszus, 457 Mass. 489, 496 (2010) (“It is not the province of courts to add words to a statute that the Legislature did not choose to put there in the first instance.”); Norfolk and Dedham Mutual Fire Ins. Co. v. Morrison, 456 Mass. 463, 468 (2010) (the meaning of a statute should not be expanded or limited “unless such is required by the ‘object and plain meaning’ of the statute[.]” quoting Canton v. Comm’r of Mass. Highway Dep’t, 455 Mass. 783, 789 (2010)).

The Attorney General agrees that the plain language of Section 83 allows for individual negotiations but requests that the Department require distribution companies to employ a competitive solicitation process in the future in order to ensure low-priced contracts (Attorney

Cape Wind and potentially execute a long-term contract. D.P.U. 09-138, Notice of Filing and Request for Comments (December 7, 2009). Twenty entities submitted comments to the Department on the MOU, including several parties involved in this proceeding. Although the Department stated in D.P.U. 09-138, at 11-12 that the contract resulting from the MOU would be subject to review and approval by the Department, no one sought reconsideration or appeal of the Department’s approval of National Grid’s use of individual negotiations as a reasonable method of soliciting long-term contracts under Section 83 and 220 C.M.R. § 17.00 et seq.

General Brief at 31; Attorney General Reply Brief at 14). The Attorney General contends that if contracts are not competitively procured they should, at the very least, undergo heightened review (Attorney General Brief at 31). AIM and NEPGA have made a related argument, requesting that the Department require distribution companies that negotiate long-term contracts outside of the statewide solicitation to comply with the requirements of the statewide solicitation (NEPGA Brief at 17, 21; AIM Brief at 18; AIM Reply Brief at 14).

As determined above, Section 83 permits the use of both individual negotiations and competitive solicitations. Consistent with the statutory language allowing individual negotiations, we cannot limit distribution companies under Section 83 to soliciting proposals only through a competitive process. As we have stated before, regardless of the method a distribution company selects to solicit proposals, the company has the burden of demonstrating that the contracts are cost-effective, in the public interest⁵⁴ and otherwise comply with Section 83 and other applicable laws. See D.P.U. 09-138, at 12.

We also decline to require distribution companies negotiating individual contracts to comply with the requirements of the statewide solicitation. Requiring distribution companies that individually negotiate to comply with the review standards of the statewide solicitation, such as the requirement that price factors be weighted 80 percent and non-price factors 20 percent, would impose restrictions on a distribution company's negotiation that Section 83 does not contemplate. 457 Mass. at 496; Gen. Elec. Co. v. Dep't of Env'tl. Prot., 429 Mass.

⁵⁴ As noted in Section VIII, below, the Department will place a greater emphasis on the comparison of PPA-1 with alternative renewable resources because PPA-1 was not arrived at through a competitive bidding process.

798, 803 (1999) (“[W]e do not ‘read into the statute a provision which the Legislature did not see fit to put there’” quoting King v. Viscoloid Co., 219 Mass. 420, 425 (1914)).

Section 83 allows a distribution company to participate in the statewide solicitation and, when it does so, to be bound by the requirements of the RFP; alternatively, a distribution company may negotiate a contract individually and use its own judgment, subject to Department review, as to what factors should be considered in assessing whether the contract complies with Section 83.⁵⁵ AIM and Alliance argue that allowing distribution companies to solicit proposals through the statewide solicitation while simultaneously engaging in individual negotiations outside of the RFP jeopardizes the integrity of the statewide solicitation process (AIM Reply Brief at 14; Alliance Brief at 16). Nothing, however, limits a distribution company’s ability to enter into contracts through both the statewide solicitation and individual negotiation. As such, the Department will not limit the ability of distribution companies to negotiate contracts individually based on review standards that differ from the statewide solicitation.

b. Applicability of Other Statutes and Precedent

i. Section 1B(d)

Section 1B(d) was enacted in 1997 in the context of electric industry restructuring. It requires each electric distribution company “to provide its customers with [basic]

⁵⁵ The Department’s regulations provide that while “[d]istribution companies shall consider participating in a DOER-administered solicitation process prior to conducting their own solicitations[,]” they “may consider additional reasonable methods of soliciting proposals from renewable energy developers including public solicitations, individual negotiations, or other methods.” 220 C.M.R. § 17.04(1).

service”⁵⁶ and directs each company to “procure such service through competitive bidding.”

NEPGA, AIM, and RESA contend that the Department must reject the contracts because National Grid’s method of solicitation was not conducted in accordance with Section 1B(d) and Department precedent (NEPGA Brief at 2 & n.4, 6, 9, 14; NEPGA Reply Brief at 2 & n.3; RESA Brief at 3-5; AIM Brief at 23).

Section 83 was enacted subsequent to Section 1B(d) as part of the Green Communities Act, legislation that comprehensively reformed energy policy in the Commonwealth. Section 83 deals directly with the procurement of long-term contracts for renewable energy and allows an electric distribution company to use energy purchased pursuant to a Section 83 long-term contract for basic service. St. 2008, c. 169, § 83, ¶ 5 (“An electric distribution company may elect to use any energy purchased under such contracts for resale to its customers”). Unlike Section 1B(d), Section 83 does not require a distribution company to undertake a competitive solicitation. Rather, a competitive solicitation is one of a number of possible permissible methods of soliciting proposals. St. 2008, c. 169, § 83, ¶ 2; see also 220 C.M.R. § 17.04(1). We must assume that the Legislature was aware of Section 1B(d) when it enacted Section 83, and we should construe these two statutes together to

⁵⁶ Section 1B(d) uses the term “default service” to describe the electric generation service that a distribution company provides to a customer who does not obtain electricity from a competitive supplier. NSTAR Electric Company, D.T.E./D.P.U. 07-4-B, Order on Reconsideration of Supply-Related Bad Debt at 1 n.1 (2010); see also 220 C.M.R. § 11.02. In Default Service Procurement, D.T.E. 04-115-A at 1, 6-7 (2005), the Department changed the term from “default service” to “basic service” in order to alleviate customer confusion, and adopted that term in Order Adopting Regulations, D.P.U. 07-105 (2008).

the extent possible so that they constitute a harmonious and consistent body of law. See, e.g., Thurdon v. SEI Boston, LLC, 452 Mass. 436, 444 (2008); City of Everett v. City of Revere, 344 Mass. 585, 588-589 (1962). Where, however, there is irreparable conflict, the specific, more recent statute governs. See, e.g., Doe v. Attorney General, 425 Mass. 210, 215-216 (1997); City of Everett v. City of Revere, 344 Mass. 585, 588-589 (1962); 2B Sutherland Statutory Construction § 51:2 (7th ed. 2010). Because the competitive solicitation provision of Section 1B(d) directly conflicts with the more recent, specifically applicable solicitation provisions of Section 83, the Department finds that the competitive solicitation requirement of Section 1B(d) does not apply to long-term contracts entered into pursuant to Section 83.

ii. Section 94A

Section 94A requires that an electric or gas distribution company obtain Department approval to enter into a contract for the purchase of electricity or gas covering a period longer than one year. G.L. c. 164, § 94A. NEPGA argues that National Grid did not comply with the solicitation requirements of Section 94A and Department precedent on Section 94A, which NEPGA contends require the use of an open and competitive procurement process (NEPGA Brief at 9, 14, citing D.P.U. 07-64-A at 59-61; NEPGA Reply Brief at 4-5 & n.8).

Section 94A itself is silent with regard to the solicitation method for entering into contracts greater than one year, while Section 83 explicitly allows distribution companies to procure long-term contracts for renewable energy through either competitive solicitations or individual negotiations. Where two or more statutes relate to the same subject matter, they should be construed together so as to constitute a harmonious whole consistent with the

legislative purpose. See, e.g., Bd. of Educ. v. Assessor of Worcester, 368 Mass. 511, 513-514 (1975). Thus, we read Section 94A and Section 83 in harmony with regard to the solicitation method.⁵⁷

Additionally, the Department has construed our approval under Section 94A to require a determination that a contract greater than one year be in the public interest. See, e.g., D.P.U. 07-64-A at 58, citing D.P.U. 95-67, at 21-22; D.P.U. 1204. Moreover, the Supreme Judicial Court has found that the public interest constitutes an overarching consideration in the Department's fulfillment of its regulatory and ratemaking duties. 438 Mass. at 268, citing 407 Mass. at 369 (“[T]he mission of the [Department] is to regulate in the public interest[.]”). Therefore, the Department will consider whether the long-term contracts before us are in the public interest in accordance with Section 94A and our general regulatory and ratemaking obligations (see Section VIII, below.).

C. Facilitation of Financing

1. Introduction

Section 83 requires a distribution company to demonstrate that the proposed long-term contract will facilitate the financing of a renewable energy project. Accordingly, we must

⁵⁷ In conducting our public interest review under Section 94A, the Department has in the past considered whether the distribution company used a competitive solicitation process. See, e.g., The Berkshire Gas Company, D.T.E. 02-56, at 10 (2002); Boston Gas Company, D.P.U./D.T.E. 97-104, at 10-11 (1997). Even if the statute contained this requirement, which it does not, the inconsistency with Section 83 would require the newer and more specific statute, Section 83, to govern. 425 Mass. at 215-216.

assess whether National Grid has demonstrated that a long-term contract with Cape Wind would facilitate the financing of the Cape Wind facility.

2. Positions of the Parties

a. National Grid

The Company states that a long-term contract with Cape Wind will help finance the project (Exh. NG-SFT at 79-88; RR-DPU-NG-3, at 1-3). The Company explains that over the past few decades, when many electric power generation projects have been developed by non-utility companies, the long-term power purchase agreement was developed as an instrument to assist developers of capital-intensive, long-lived assets to access project financing (Exh. NG-SFT at 81). The Company asserts that, without a long-term contract with a creditworthy entity like an electric distribution company, it will be difficult if not impossible for a non-utility developer of renewable energy, like Cape Wind, to obtain financing (Exh. NG-SFT at 81-82; RR-DPU-NG-3, at 1-2). The Company explains that a renewable energy developer, unlike a utility with a large balance sheet, cannot invest in a project through internally generated funds (RR-DPU-NG-3, at 1-2). The Company maintains that, in order to attract financing the project requires a high degree of certainty and predictability that its revenue streams over time will be sufficient to pay operating costs and cover debt payments (Exh. NG-SFT at 80-82; RR-DPU-NG-3, at 1-2). The Company contends that lenders do not consider revenue from wholesale generation or RECs markets as sufficiently certain and predictable to finance a project (RR-DPU-NG-3, at 1-2). In contrast, the Company asserts, a long-term contract enhances a project's ability to obtain financing by providing a direct link

between the output of the project (e.g., electric generation, production of RECs) and its predictable sources of revenue (e.g., a payment schedule from a creditworthy entity that purchases the output over time) (Exh. NG-SFT at 81; RR-DPU-NG-3, at 1-2). For these reasons, the Company argues that PPA-1, with or without PPA-2, will facilitate the financing of the Cape Wind facility (RR-DPU-NG-3, at 1-3).

b. Cape Wind

Cape Wind states that the purpose of Section 83 is to facilitate the financing of renewable energy projects by authorizing electric distribution companies to enter into long-term contracts with these generators (Cape Wind Brief at 13 n.13). According to Cape Wind, it has established that the Department's approval of PPA-1 is essential in order for the facility to obtain financing (Cape Wind Brief at 13 n.13, citing Exhs. CW-DJD-1, at 9, 30, 32; CW-RBS-1, at 5; Tr. 1, at 140, 210). Cape Wind concludes that its facility fully satisfies the primary purpose and intent of Section 83 (Cape Wind Brief at 13 n.13).

c. Attorney General

The Attorney General states that the Cape Wind contracts are expected to facilitate financing of the project, which is unique in the renewable energy industry in view of its large size, advanced permitting status, and potential to be the first offshore wind facility in the country (Attorney General Brief at 33, citing Exh. NG-SFT, at 14, 91, 117-118; Tr. 1, at 105; Tr. 2, at 363). Specifically, the Attorney General contends that PPA-1 is needed for Cape Wind to obtain financing (Attorney General Brief at 33, citing Tr. 3, at 505-512).

d. Alliance to Protect Nantucket Sound

Alliance argues that Cape Wind cannot obtain financing because it faces many years of litigation and appeals, including those related to Cape Wind's National Environmental Policy Act permits (Alliance Brief at 35). Alliance further contends that Cape Wind will have difficulty with financing because it has been unable to find a buyer for any of the output under PPA-2 (Alliance Brief at 37, citing Tr. 1, at 83, lines 11-13).

e. CLF et al.

CLF et al. state that the record in this case demonstrates that long-term contracts will facilitate the financing of the Cape Wind facility because such contracts are essential to its ability to secure financing (CLF et al. Brief at 11). CLF et al. assert that new electric generation projects in New England almost always require long-term contracts in order to obtain financing (CLF et al. Brief at 11, citing Exh. CLF/CPN-PC at 23). According to CLF et al., by providing predictable revenues, long-term contracts enable capital investment in new renewable energy projects (CLF et al. Brief at 11, citing RR-DPU-N-3, at 2). CLF et al. argue that the Cape Wind project, as the first offshore wind facility in North America, would be difficult to finance without a long-term contract (CLF et al. Brief at 11, citing Exh. CLF/CPN-PC at 24).

3. Analysis and Findings

Section 83 requires electric distribution companies to demonstrate, as a threshold matter, that a proposed long-term contract will facilitate the financing of a renewable energy project. For the reasons discussed below, we find that National Grid has demonstrated that

PPA-1 will assist Cape Wind in obtaining financing for the project and, therefore, this threshold requirement has been met (Exh. NG-SFT at 80-82; RR-DPU-NG-3).

The evidence demonstrates that a project like Cape Wind would face difficulty in attracting financing without a predictable source of revenues with a creditworthy entity (Exh. NG-SFT at 80-82; RR-DPU-NG-3). The predictable revenue stream of a long-term contract will help overcome obstacles to Cape Wind obtaining financing (Exh. NG-SFT at 80-82; RR-DPU-NG-3). Ultimately, National Grid relied upon the representations of Cape Wind, the sole entity that has been in contact with the financing community about the Cape Wind project, that the terms of PPA- will be sufficient for Cape Wind to obtain financing (Tr. 5, at 1066-1067; Tr. 3, at 511-512).

Similarly, Cape Wind provided evidence that PPA-1 will facilitate the financing of its project. Cape Wind testified that long-term contracts are critical to enhancing the likelihood of its obtaining financing because such contracts identify the buyer of the output and provide for a revenue stream (Tr. 3, at 507-509). Although Cape Wind acknowledges that, historically, projects were developed and financed without a long-term contract in place, it has been five to ten years since that was the industry norm for the development of energy projects (Tr. 3, at 508). Cape Wind also testified that, in the current capital markets, it is unlikely that a renewable or even a non-renewable energy project will be developed without a long-term contract for a major share of the output (Tr. 3, at 508-510). As such, Cape Wind testified that long-term contracts are necessary to secure financing for the Cape Wind project (Exhs. CW-DJD-1, at 30, 32; CW-RBS-1, at 5; Tr. 3, at 511-512).

No party refuted the testimony of National Grid and Cape Wind that long-term contracts help the developers of renewable energy generation projects obtain financing, and we find such testimony credible and reliable.⁵⁸ While Alliance asserts that pending lawsuits will prevent Cape Wind from obtaining financing, this is not the appropriate inquiry. Section 83 does not require National Grid to demonstrate that a long-term contract will *secure* project financing, only that it will *assist* in securing project financing.⁵⁹ Indeed, while pending litigation may affect the timing of project financing, nothing in Section 83 requires National Grid to demonstrate that long-term contracts will facilitate project financing within a particular timeframe.

For these reasons, we find that National Grid appropriately demonstrated that PPA-1 will facilitate the financing of the Cape Wind project. Accordingly, we conclude that National Grid has sufficiently demonstrated compliance with the Section 83 threshold requirement that long-term contracts facilitate the financing of a renewable energy resource.

VII. COST-EFFECTIVENESS

A. Introduction

Section 83 and the Department regulations require that, in order to approve a long-term contract with a renewable energy generating source, the Department must determine that the

⁵⁸ The Attorney General and CLF et al. expressly support the need for long-term contracts to facilitate the financing of these projects.

⁵⁹ We have declined to define or give particular meaning to the term “financing” as used in Section 83. See D.P.U. 10-76, at 31 n.9 (considering this issue in context of the Revised RFP). Nevertheless, we note that “facilitate” is typically defined as “to make easier or less difficult.” Webster’s Third New International Dictionary 812 (1993).

contract is “cost effective to Massachusetts electric ratepayers over the term of the contract.” St. 2008, c. 169, § 83, ¶ 3; 220 C.M.R. § 17.05(1)(c)(3). Section 83, ¶ 3 also states that the Department “shall take into consideration both the potential costs and benefits of such contracts, and shall approve a contract only upon a finding that it is a cost effective mechanism for procuring renewable energy on a long-term basis.”

Section VII.B, below, addresses the scope of costs and benefits to be included in the Department’s cost-effectiveness analysis. In Sections VII.C and D, the Department identifies the costs and benefits that we will take into account in determining the cost-effectiveness of PPA-1. In Section VII.E, the Department evaluates the costs and benefits to determine whether PPA-1 is cost-effective to ratepayers over the term of the contract.

- B. Scope of Costs and Benefits
 - 1. Positions of the Parties
 - a. National Grid

National Grid contends that the Legislature has left to the Department’s discretion the factors to be considered in the cost-effectiveness determination of Section 83 contracts (National Grid Brief at 23). The Company states that the cost-effectiveness standard must be employed in light of the primary purposes of the statute, that is, to facilitate the financing of renewable generation to assure adequacy of supply and meet the long-term renewable energy goals of the Commonwealth (National Grid Brief at 23-24; National Grid Reply Brief at 1). National Grid also states that in performing its cost-effectiveness analysis of PPA-1, the

Department should take into account the project's price and non-price attributes.⁶⁰ National Grid states that although these attributes are essential, they are not all easily quantified (National Grid Brief at 36-38; National Reply Brief at 2). National Grid contends that a contract is a cost-effective mechanism for procuring renewable energy on a long-term basis if it: (1) makes a material difference in assuring the adequacy of supply to meet the Commonwealth's renewable energy goals; (2) involves a facility that would not be constructed without the contract; (3) offers tangible and non-tangible benefits identified by the Green Communities Act; and (4) has a unit cost and other terms that are reasonable (National Grid Reply Brief at 2).

National Grid argues that Alliance and other parties offer very limited and rigid views of the cost-effectiveness standard that run counter to the purposes of Section 83 (National Grid Reply Brief at 3). National Grid claims that the opponents seek a "least unit cost" test that ignores all other factors (National Grid Reply Brief at 3). National Grid states that different projects can offer unit pricing at varying costs per kWh, all of which can be cost-effective (National Grid Reply Brief at 3). In addition, National Grid observes that the Legislature could have established a least cost test but did not do so (National Grid Reply Brief at 3). Thus, National Grid argues that Section 83 cannot require the electric distribution company to perform a project-by-project review that necessarily selects the lowest unit cost projects first,

⁶⁰ The term "non-price" attributes refers to all costs and benefits that cannot easily be quantified and put into monetary (i.e., price) terms. According to National Grid, these benefits include carbon reduction, hedging value, and price suppression (National Grid Brief at 36-38).

without regard to other factors that make other cost-effective projects preferable (National Grid Reply Brief at 3). National Grid argues that the “bright line test” advocated by Alliance would effectively preclude any renewable project from being built if it could not offer a price that is close to or below forecasted market prices, a measure that would be contrary to Section 83 (National Grid Reply Brief at 4).

b. Cape Wind

Cape Wind states that although Section 83 does not define the term “cost-effective,” its usual and common meaning is “‘producing good results for the amount of money spent; efficient or economical’” (Cape Wind Brief at 19-20, citing Webster’s New World College Dictionary (2010)). Cape Wind asserts that the Department has broad discretion to determine the factors to include in its cost-effectiveness determination, based on its specialized knowledge and technical expertise and with a view toward achieving the goals of Section 83 and related public policy objectives (Cape Wind Brief at 20; Cape Wind Reply Brief at 4-5). Cape Wind argues that the Department is empowered to consider not only the costs and benefits of the resources that will be necessary to satisfy Section 83 and state and regional RPS requirements, but also broader societal price and non-price benefits and costs (Cape Wind Brief at 20). Specifically, Cape Wind argues that the Department must determine whether the PPAs are cost-effective: (1) based on how they were procured; (2) in light of the limited inventory of other renewable power options that were available to National Grid in order to satisfy its obligations pursuant to Section 83; and (3) recognizing the other benefits and costs of the PPAs (Cape Wind Brief at 19).

Cape Wind asserts that Section 83 does not require that National Grid limit its long-term contracts with renewable resources to the lowest cost alternatives (Cape Wind Brief at 40; Cape Wind Reply Brief at 5-6). Cape Wind contends that if the Legislature had intended to mandate that distribution companies choose only the lowest cost options or consider only price factors, Section 83 would have said so explicitly (Cape Wind Brief at 41, citing Town of Dover v. Mass. Water Res. Auth., 414 Mass. 274, 282 (1993); Town of Brookline v. Comm’r of Dep’t of Env’tl. Quality Eng’g, 398 Mass. 404, 414 (1986); Cape Wind Reply Brief at 4-5). Instead, Cape Wind contends that Section 83 provides a flexible standard and grants the Department discretion regarding its implementation (Cape Wind Brief at 40-41; Cape Wind Reply Brief at 5).

Cape Wind states that the proposed bright line test, propounded by Alliance, is flatly inconsistent with the plain language and intent of Section 83 (Cape Wind Brief at 39; Cape Wind Reply Brief at 7). Cape Wind contends that Section 83 anticipates the recovery of above-market costs that the bright line test would disallow (Cape Wind Brief at 39-41; Cape Wind Reply Brief at 6-7). Cape Wind argues that this threshold test must fail because it does not fully capture benefits intended by the Legislature in requiring that the financing of renewable resources be facilitated (Cape Wind Brief at 40, citing Exh. CW-RBS-9, at 21)). Cape Wind asserts that the alternative compliance payment (“ACP”):⁶¹ (1) does not achieve the same environmental and renewable energy benefits as an actual renewable project that

⁶¹ Any entity required to comply with the RPS regulations may, if necessary, discharge some or all of its obligations by making an ACP in the appropriate amount to the Massachusetts Clean Energy Center See 225 C.M.R. § 15.07(3).

generates RECs; and (2) in no way constrains the Department in approving a long-term contract for renewables that provides value inadequately reflected by the ACP (Cape Wind Brief at 40; Cape Wind Reply Brief at 6-7, citing Exh. CW-RBS-9, at 21-22; Tr. 7, at 1593-1597, 1601).

c. Attorney General

The Attorney General contends that, consistent with Section 83, the Department must evaluate all costs and benefits in determining the cost-effectiveness of the PPAs (Attorney General Reply Brief at 16). The Attorney General argues that PPA-1 is cost-effective based on its substantial unique benefits, the fact that it is priced on a par with other comparable offshore wind projects, the reasonableness of its likely costs, and its significant customer protections (Attorney General Brief at 34). The Attorney General identifies a number of benefits to be included in the Department's cost-effectiveness analysis, including system reliability, moderation of peak load, job creation, acting as a hedge against price volatility, facilitating the financing of the project, facilitating the development of new renewable energy technology, and ensuring that RPS goals are met (Attorney General Brief at 32-33).

The Attorney General takes issue with DOER and CLF et al. with regard to their support for the Department's adoption of a modified version of the Total Resource Cost ("TRC")⁶² test for evaluating Section 83 contracts (Attorney General Reply Brief at 16). She

⁶² The TRC test is a framework for measuring cost-effectiveness based on the total costs of and benefits of a resource, including costs and benefits to both the distribution company and its customers. The Department applies the TRC test to measure the cost-effectiveness of energy efficiency programs. Energy Efficiency Guidelines,

notes that the TRC test as applied in the context of energy efficiency evaluation requires that all costs and benefits be quantified and that a program will be considered cost-effective only if its quantified benefits exceed its quantified costs (Attorney General Reply Brief at 16). The Attorney General asserts that it is not necessary to quantify all the costs and benefits of PPA-1 to reach the conclusion that its benefits are significant and that the contract is cost-effective (Attorney General Brief at 27-34; Attorney General Reply Brief at 16).

According to the Attorney General, the Supreme Judicial Court has stated that the Department's jurisdiction over electricity rates does not extend to consideration of the costs incurred by society as a result of pollution (Attorney General Reply Brief at 17-18, citing Mass. Elec. Co. v. Dep't of Pub. Utils., 419 Mass. 239, 245-246 (1994)). The Attorney General states that the Supreme Judicial Court has indicated that the Department may require a utility to avoid such costs "provided that reasonably anticipated future circumstances will impose costs on the utility that will be detrimental to the interests of ratepayers" (Attorney General Reply Brief at 17, quoting 419 Mass. at 246). The Attorney General contends that the Department's cost-effectiveness test for energy efficiency programs includes environmental compliance costs only to the extent that they are associated with current and reasonably anticipated future environmental compliance requirements (Attorney General Reply Brief at 17-18, citing Energy Efficiency Guidelines, D.P.U. 08-50-A at 16 (2009)). However, the Attorney General argues that the Department cannot include as a benefit in its

D.P.U. 08-50, at 4 (2008); Energy Efficiency Guidelines, D.P.U. 08-50-A at 1-2 (2009).

cost-effectiveness analysis the project's contribution to avoiding the future costs of compliance with the Global Warming Solutions Act ("GWSA"), because these costs are currently unknown and speculative (Attorney General Reply Brief at 18).

d. Alliance to Protect Nantucket Sound

Alliance argues that National Grid has failed to demonstrate that the Cape Wind PPAs are cost-effective (Alliance Reply Brief at 4). Alliance argues that under the laws and precedents of Massachusetts, it is well established that a distribution company must demonstrate that a proposed PPA is the lowest cost alternative consistent with the provision of reliable service (Alliance Brief at 4 & n.4; Alliance Reply Brief at 13-14 & n.6, citing, see, e.g., D.P.U. 89-239). According to Alliance, the Department must consider the costs of alternatives in its cost-effectiveness review (Alliance Reply Brief at 3). Alliance argues that National Grid failed to quantify price and non-price considerations, failed to assign weights to these factors, and appeared to accord no weight at all to price factors (Alliance Brief at 16-17, 19; Alliance Reply Brief at 3-4). In addition, Alliance contends that evaluating the cost-effectiveness of the PPAs requires a comparison of their costs and benefits to those of other resources and that National Grid has failed to demonstrate that the PPAs are reasonably priced when compared to alternative renewable energy resources (including out of state alternatives) (Alliance Brief at 13, 17-19; Alliance Reply Brief at 16-18). Alliance asserts further that Cape Wind cannot rely on the need for power from the facility (as indicated in the Company's gap analysis) to meet its burden to prove that the PPAs are cost-effective (Alliance Brief at 22-23; Alliance Reply Brief at 5).

Alliance proposes a bright line threshold test for cost-effectiveness, where a PPA is not cost-effective if its levelized cost is greater than the sum of the all-in price of electricity plus the ACP (Alliance Brief at 10-11; Alliance Reply Brief at 11-13). Alliance asserts that its proposed approach is akin to the TRC test for energy efficiency resources which, like renewable resources, provide non-market or “external” benefits (Alliance Brief at 11). Alliance argues that the ACP establishes a ceiling price on RECs and that Section 83 explicitly recognizes the relevance of the ACP (Alliance Brief at 10-11; Alliance Reply Brief at 12). Alliance explains that Section 83 specifically provides that DOER must assess whether the long term contracting requirements of Section 83 reasonably support the renewable energy goals of the Commonwealth and “whether the [ACP] . . . should be adjusted accordingly” (Alliance Brief at 11). Alliance argues that, to the extent the bright line test establishes a threshold that is too low to support the Commonwealth’s goals, the solution is for DOER to adjust the ACP upward to allow more projects to meet the threshold (Alliance Brief at 11). Alliance argues that the Cape Wind PPAs fail the bright line cost-effectiveness test (Alliance Brief at 10-12).

Finally, Alliance maintains that the Department should not consider the price adjustment provisions of the Settlement Agreement in its cost-effectiveness analysis, because alternative resources were given no opportunity to match the price adjustment provisions and the Department does not have sufficient cost data to analyze their value (Alliance Reply Brief at 20-22).

e. CLF et al.

CLF et al. note that Section 83 does not define the term “cost-effective,” and provides little guidance to the Department beyond a requirement that it “take into consideration both the potential costs and benefits,” and that cost-effectiveness should be viewed over the entire term of a PPA (CLF et al. Brief at 16-18). CLF et al. state that the flexible and open-ended language of Section 83 regarding cost-effectiveness stands in contrast to the explicit definition used in other sections of the Green Communities Act, specifically those sections addressing energy efficiency (CLF et al. Brief at 16-18, citing G.L. c. 25, §§ 21(a), (b), (d)).

CLF et al. urge the Department to reject those cost-effectiveness tests that are inconsistent with Section 83 (CLF et al. Reply Brief at 7-13). Specifically, CLF et al. repudiate the bright line test advocated by Alliance because it: (1) is contrary to the plain language of Section 83, which contemplates above-market costs; (2) fails to take into account non-price values; and (3) mistakenly uses the ACP as a cap on REC prices (CLF et al. Reply Brief at 8-10).

In addition, CLF et al. challenge the other cost-effectiveness standards proposed by Alliance because it contends that: (1) a distribution company need not demonstrate that a proposed Section 83 contract is the lowest cost alternative consistent with the provision of reliable service; (2) Section 83 does not require a distribution company to prove its contract is the very best possible deal among all potential long-term renewable energy contracts; (3) distribution companies need not prove that contract prices are below market over the life of the contract or compare favorably with current market prices where that comparison does not

account for all attributes of the contract; and (4) a distribution company cannot comply with Section 83 by procuring RECs outside the Section 83 process or by making ACP payments (CLF et al. Reply Brief at 10-13, citing D.P.U. 07-64-A).

CLF et al. also state that it may be helpful for the Department to borrow from its well developed cost-effectiveness principles for energy efficiency, with adaptations to embrace a more qualitative approach that accounts for inherent uncertainties over the long term (CLF et al. Brief at 18-19). Finally, CLF et al. assert that in evaluating the cost-effectiveness of the PPAs, the Department should fully credit the Cape Wind facility for benefits associated with avoiding environmental compliance costs attributable to existing and reasonably foreseeable state and federal environmental requirements (CLF et al. Brief at 34).

f. Department of Energy Resources

DOER states that the Department can dispense with the notion that “cost-effective” means least cost, stating that nowhere does Section 83 use the term “least cost” and that the Legislature would have done so had it intended “cost-effective” to be interpreted in that manner (DOER Brief at 9). DOER alleges that the language of Section 83 is incompatible with a least cost standard and that the decisions relied upon by Alliance are irrelevant to the Department’s review here because they are based on a different statutory scheme (DOER Reply Brief at 4-5). DOER argues that the Department should reject Alliance’s bright line test, noting that Section 83 includes a provision that is specifically designed for the allocation of above-market costs (DOER Brief at 9-10). DOER states further that the TRC test used for energy efficiency is a useful starting point for the evaluation of the cost-effectiveness of

Section 83 contracts, with certain modifications, which it details, that are necessary in light of the difference in policy goals and statutory language between the energy efficiency provisions of the Green Communities Act and Section 83 (DOER Brief at 11-16). DOER evaluates the cost and benefits of PPA-1 under a range of scenarios. DOER determines that under a high fuel-price scenario, the contract could provide net savings to National Grid's ratepayers based on market revenue alone (DOER Brief at 16-18). When DOER incorporates other quantifiable benefits such as price suppression, in addition to hard-to-measure benefits,⁶³ it concludes that the estimated benefits outweigh the costs of PPA-1 and that they are, therefore, cost-effective (DOER Brief at 44-48).

g. TransCanada

TransCanada argues that in order to determine whether Cape Wind is cost-effective the Department must take into account alternatives to the proposed PPAs and, because less costly alternatives exist, the PPAs are not cost-effective (TransCanada Brief at 5-6). According to TransCanada, National Grid should have used a competitive procurement to ensure that the PPAs are cost-effective (TransCanada Brief at 5-6).

h. New England Power Generators Association

NEPGA argues that the PPA s cannot be cost-effective in the absence of a reasonable solicitation process that includes consideration of more than one proposal (NEPGA Brief

⁶³ In its cost-effectiveness analysis, DOER includes price suppression and the ten year option to renew provision as quantifiable benefits, and the hedge against electric price volatility, increased likelihood of achieving Massachusetts' goals under the RPS standard, enhanced reliability, moderated peak load, job creation, and down payment on future GWSA compliance costs as hard-to-measure benefits (DOER Brief at 45-48).

at 12). NEPGA asserts that National Grid's procurement of the Cape Wind contract was inconsistent with the Initial RFP process approved by the Department (NEPGA Brief at 16-21). Specifically, NEPGA maintains that National Grid's over reliance on non-price factors was contrary to the Initial RFP process that focused on price factors to encourage the selection of proposals with the greatest value (NEPGA Brief at 20-21).

i. Associated Industries of Massachusetts

AIM argues that the intent of the Initial RFP was to establish a standardized framework for the evaluation of bids and the negotiation of PPAs (AIM Brief at 17-18). Accordingly, AIM urges the Department to use the bid evaluation and selection criteria from the Initial RFP to evaluate the PPAs (AIM Brief at 18).

2. Analysis and Findings

The parties have raised many questions regarding the appropriate scope of the costs and benefits to be included in the Department's evaluation of the cost-effectiveness of PPA-1 under Section 83, including whether: (1) it is necessary to conduct a competitive bidding process in order to determine whether a contract is cost-effective; (2) the analysis should be based on the TRC test that the Department applies to energy efficiency programs or a modified TRC test; (3) it should include non-price as well as price factors; (4) it should account for environmental or societal externalities; (5) it should account for the costs and benefits of compliance with future environmental regulations; (6) it should be based on Alliance's bright line test; and (7) PPA-1 must be the lowest cost resource in order to be cost-effective. We address each of these questions below.

Section 83 does not define the term “cost-effective.” Where the Legislature leaves a statutory term undefined, the task of interpretation is left to the discretion of the implementing agency. City of Cambridge v. Dep’t of Telecomm. & Energy, 449 Mass. 868, 875 (2007); see also 407 Mass. at 367 (court gives great deference to the Department’s expertise and experience in areas where the Legislature has delegated decision-making authority); MCI Telecomm. Corp. v. Dep’t of Telecomm. & Energy, 435 Mass. 144, 150-151 (2001) (Court gives great deference to the Department’s expertise and experience where case involves interpretation of complex statutory and regulatory framework). Here, the Department has discretion to define the applicable scope of costs and benefits to be included in our cost-effectiveness analysis under Section 83.

In order to define the scope of our cost-effectiveness analysis, the Department examines the language of Section 83 and the objectives of the Green Communities Act. See 429 Mass. at 802 (plain language of statute evinces legislative intent). Section 83, ¶ 3 requires the Department to determine that a contract is cost-effective to Massachusetts electric ratepayers over its term. Section 83, ¶ 3 further requires the Department to consider both the potential costs and benefits of such contracts, and approve a contract only if we find it is a cost-effective mechanism for procuring renewable energy on a long-term basis.

It is important to emphasize here that a Department finding that a long-term contract for renewable energy is cost-effective does not necessarily mean that procuring such a contract is in the best interest of customers. A distribution company must also demonstrate that the proposed long-term contract is in the public interest. Our review of the public interest impacts

of long-term contracts for renewable energy will be based on the specific issues that are relevant to each proposed contract. With regard to PPA-1, the Department will investigate four specific issues relating to the public interest in Section VIII of the Order. First, we will consider whether it is appropriate for National Grid to procure renewable energy through PPA-1 given that there are other, lower cost alternatives available. Second, we will consider whether the pricing terms in PPA-1 are reasonable, given the type of renewable resource being purchased. Third, we will consider whether National Grid is purchasing the appropriate amount of renewable power through PPA-1, particularly given that the contract could supply 3.5 percent of the Company's electric load. Fourth, we will consider whether the bill impacts of PPA-1 on National Grid customers are acceptable. Several of the issues raised by the parties with regard to cost-effectiveness are, therefore, not applicable to our cost-effectiveness review but instead relate to our review of whether PPA-1 is in the public interest (see Section VIII, below).

Several parties incorrectly assert that contracts for renewable energy such as PPA-1 cannot be considered cost-effective unless they were procured using a competitive bidding process. As discussed in Section VI.B, above, Section 83 does not require all contracts for renewable energy to be procured through competitive bidding processes. Further, Section 83 does not require that contracts be subject to a competitive bidding process in order to be considered cost-effective. The Department recognizes, however, that a competitive procurement process provides a direct comparison of the costs and benefits of alternative resources, as well as some assurance that the bidders are not charging too high a price for a

given resource. We agree that the costs and benefits of a long-term contract for renewable energy must be compared with the costs and benefits of alternative renewable resources (see, e.g., Alliance Brief at 19; Alliance Reply Brief at 3). However, the Department does not perform that comparison to determine whether a contract is cost-effective. Instead, as described above, we perform that comparison to determine whether the procurement of a particular Section 83 contract is in the public interest.

As noted by DOER and CLF et al., the Department has long applied the TRC test as a framework for evaluating the cost-effectiveness of energy efficiency resources. See Energy Efficiency Guidelines, D.T.E. 98-100 (Proposed) at 15 (1999); Energy Efficiency Guidelines, D.P.U. 08-50, at 4 (2008); D.P.U. 08-50-A at 1-2. The TRC test is consistent with the directives of the Supreme Judicial Court in Massachusetts Electric Company v. Dep't of Pub. Utils., 419 Mass. 239 (1994). There, the Supreme Judicial Court determined that, without express statutory authority, the Department could not take into account costs associated with environmental damages that do not, and cannot reasonably be anticipated to, have an effect on a utility's costs and thereby on the rates paid by customers. 419 Mass. at 245.

The TRC test limits the scope of a cost-effectiveness review to the costs and benefits to the electric distribution company and its customers. D.P.U. 08-50-B, at 48, § 3.4.3. As this approach is consistent with the mandates of the Supreme Judicial Court, we adopt the TRC framework for our cost-effectiveness analysis here. However, to the extent that Section 83 requires that we look beyond the costs and benefits to National Grid and its customers, as for

example in the explicit statutory requirement that we consider employment benefits, we depart from the TRC method.

The Attorney General raises the concern that the TRC test, applied in the context of energy efficiency, requires that all costs and benefits be quantified in monetary terms (Attorney General Reply Brief at 16). DOER attempts to address these concerns by suggesting certain modifications to the TRC test (DOER Brief at 11-16). We note that the TRC test provides a framework for analyzing cost-effectiveness — one that we have applied in a particular way to analyzing energy efficiency programs. The Department is not obliged to evaluate costs and benefits under the TRC test in the Section 83 context in the exact same way as we evaluate energy efficiency.⁶⁴ Here, we find that it is not necessary for all costs and benefits to be quantifiable or quantified in order for us to give them weight. Indeed, Section 83 on its face requires us to consider benefits that are reasonable to weigh only from a qualitative perspective (e.g., electric system reliability).

As discussed above regarding the mandates of the Supreme Judicial Court, the Department does not agree with Cape Wind that we can include broad societal costs and

⁶⁴ For example, quantification of all costs and benefits is appropriate when assessing the cost-effectiveness of energy efficiency programs because of the sheer number and variety of efficiency measures that must be considered in each case. Energy efficiency program administrators (all electric and gas distribution companies as well as aggregators such as the Cape Light Compact) evaluate many different efficiency measures within many different efficiency programs – each of which might have its own unique array of costs and benefits. In order to allow for an orderly and pragmatic evaluation of efficiency measures, the Department has determined that it important to have all costs and benefits quantified and presented as a single benefit-cost ratio. D.T.E. 98-100, at 15-16. The same constraints do not apply in the context of Section 83 contracts for renewable power.

benefits in our evaluation of the cost-effectiveness of PPA-1. However, we can and will include in our cost-effectiveness analysis those costs and benefits that are likely to affect electricity rates, including the costs of compliance with existing or reasonably anticipated future environmental requirements. 419 Mass. at 246; see also D.P.U. 08-50-A at 14-16 (Department may require companies to include reasonably foreseeable environmental compliance costs in evaluating energy resources).

The Department also rejects Alliance's proposed bright line test as it is inconsistent with both the intent and the plain language of Section 83. ACP for the RPS do not achieve the same benefits as the actual physical supply of renewable energy, which Section 83 was clearly designed to encourage. See Section V.D.5, below. Furthermore, Section 83 anticipates that distribution companies may incur above-market costs associated with their long-term contracts in that it provides guidance for how these costs are to be recovered from electricity customers.⁶⁵

In addition, the Department rejects Alliance's and TransCanada's assertion that National Grid must demonstrate that PPA-1 is the lowest cost alternative in order to be considered cost-effective. First, this position is not supported by the statutory language; Section 83 does not require a contract to be "least cost" in order to be cost-effective. See 457

⁶⁵ Section 83, ¶ 6 provides "[i]f the distribution company sells the purchased energy into the wholesale spot market . . . the distribution company shall net the cost of payments made to projects under the long-term contracts against the proceeds obtained from the sale of energy and RECs, and the difference shall be credited or charged to all distribution customers through a uniform fully reconciling annual factor in distribution rates"

Mass. at 496 (“It is not the province of courts to add words to a statute that the Legislature did not choose to put there in the first instance.”); 456 Mass. at 468 (the meaning of a statute should not be expanded or limited “unless such is required by the ‘object and plain meaning’ of the statute[.]” quoting 455 Mass. at 789). As National Grid, DOER and Cape Wind observe, the Legislature could have established such a test explicitly but it did not do so.

Cf. G.L. c. 164, § 69I (With respect to gas forecast and supply plans, the Department is required to ensure “a necessary energy supply for the [C]ommonwealth with a minimum impact on the environment at the lowest possible cost”).

Second, a cost-effectiveness test that requires distribution companies to procure the lowest cost resource would effectively require the Department to ignore all non-price factors, an approach we have already indicated we reject. Such an extremely limited approach to evaluating resources would disregard important contract terms and conditions, and would overlook the fact that different renewable resources offer different types and magnitudes of benefits. Third, limiting cost-effectiveness to the lowest cost resource ignores the fact that there may be many cost-effective resources necessary to achieve a certain public policy objective. We note that, in the context of our evaluation of energy efficiency programs, there are many programs that are deemed to be cost-effective, even though they have widely varying costs. Each energy efficiency program’s cost-effectiveness is based on a comparison of its costs to its benefits – regardless of the costs and benefits of other efficiency programs.

Three-Year Electric Energy Efficiency Plans, D.P.U. 09-116 through D.P.U. 09-120 (2010); D.P.U. 08-50-A; D.P.U. 98-100. Similarly, for each long-term contract filed under

Section 83, the Department will compare its potential costs to its potential benefits to determine cost-effectiveness.

In sum, the Department will consider in our cost-effectiveness analysis all costs and benefits associated with PPA-1, including the non-price benefits that are difficult to quantify, and including costs and benefits of complying with existing and reasonably anticipated future federal and state environmental requirements. We observe that there are further benefits of PPA-1 that accrue to others beyond National Grid's ratepayers — for example, the regional benefits of price suppression. In reviewing benefits and costs of PPA-1, however, our focus is on the benefits and costs that accrue to National Grid and its customers.

C. Costs

1. Contract Costs

a. Introduction

There are two categories of ratepayer costs associated with PPA-1: contract costs directly related to PPA-1; and other costs. With respect to contract costs, the pricing structure of PPA-1 includes a 2013 Base Price equal to \$187 per MWh, escalating annually at a rate of 3.5 percent (PPA-1, exh. E, App. X, § 1; Exh. NG-MNM (Supp.) at 4). The Base Price may be subject to the following adjustments: (1) a price increase up to a maximum of \$193 per MWh if Cape Wind reduces the nameplate capacity of the facility below 468 MW (i.e., the Size-Adjusted Price); (2) a price increase if the facility is ineligible for the ITC or PTC (i.e., the Tax Credit-Adjusted Price); (3) a price decrease if Cape Wind is able to obtain debt financing at an interest rate lower than 7.5 percent (i.e., the Financing-Adjusted Price); and (4) a price decrease if Cape Wind's IRR exceeds 10.75 percent (i.e., the Cost-Adjusted Price)

(PPA-1, exh. E, App. X; Exh. NG-MNM (Supp.) at 4-6). In addition, National Grid may receive credits against the cost of PPA-1 if the facility exceeds its projected capacity factor of 37.1 percent in any year (i.e., the Wind Outperformance Adjustment Credit), or more favorable terms if the Most Favored Nation Clause is triggered (PPA-1, § 5 & exh. E, App. Y; Exh. NG-MNM (Supp.) at 10). Here, the Department addresses these provisions and, based on the likelihood of their being triggered, identifies the range of reasonably likely contract costs that we will use to evaluate the cost-effectiveness of PPA-1.

b. Positions of the Parties

i. National Grid

National Grid contends that, taken together, the terms and conditions of PPA-1 reflect a reasonable and beneficial contractual arrangement for customers (National Grid Brief at 36). National Grid claims that the Financing-Adjusted Price and the Cost-Adjusted Price provide assurance that the contract cost is only what Cape Wind needs to finance the project (Exh. NG-MNM-R at 5). National Grid asserts that the Cost-Adjusted Price provision prevents Cape Wind from earning an excessive profit margin, while also providing an incentive for Cape Wind to build the project efficiently and at the lowest reasonable cost (National Grid Brief at 35). National Grid alleges that recent trends indicate that construction and financing costs for the facility should be lower than expected, which would provide benefits for National Grid's ratepayers⁶⁶ (Exh. NG-MNM-R at 16).

⁶⁶ National Grid observes that interest rates have “dropped significantly” since the initial pricing was negotiated, which would impact the Financing-Adjusted Price. Also, National Grid notes that the exchange rate between the dollar and the euro has

ii. Cape Wind

Cape Wind asserts that the record contains ample evidence demonstrating that it is likely to obtain a United States Department of Energy (“DOE”) loan guarantee, which will reduce its cost of debt to five percent or lower (Cape Wind Brief at 33).⁶⁷ Cape Wind contends that, as the Attorney General asserts, the Financing-Adjusted Price provision is likely to take effect, which will provide National Grid ratepayers with reduced costs. Cape Wind further argues that, on a net present value (“NPV”) basis⁶⁸ and, assuming a five percent cost of debt,⁶⁹ this would reduce PPA-1 costs by \$135 million over its 15-year term (Cape Wind Brief at 33-34, citing Exh. AG-JWJC-1, at 20-21).

Cape Wind states that the Cost-Adjusted Price provision offers benefits to National Grid ratepayers because it aligns contract price with actual project costs (Cape Wind Brief at 34). In response to Alliance’s claim that Cape Wind could earn a 79 percent return on equity (“ROE”), Cape Wind argues that this allegation is completely unsupported and unsupportable, and is based on Alliance’s gross error that it would be possible to leverage

improved, that competition for wind turbines has declined, and that both factors may reduce costs and trigger the Cost-Adjusted Price (Exh. NG-MNM-R at 16).

⁶⁷ See Title XVII of the Energy Policy Act of 2005. Cape Wind notes that recent DOE loans have been in the range of four percent (Cape Wind Brief at 33-34).

⁶⁸ NPV or present value is defined as “[t]he present value of net cash flow from a project, discounted by the cost of capital.” Black’s Law Dictionary 1203 (7th ed. 1999). The term “cumulative present value” is more accurate but we will use NPV rather than cumulative present value in this Order for ease of reference.

⁶⁹ The Attorney General’s estimate of these savings, on an NPV basis, assumes a seven percent discount rate (Exh. AG-JWJC-1, at 21).

90 percent or more of the project's debt (Cape Wind Reply Brief at 17-18). According to Cape Wind, Alliance's assumption is inconsistent with standard industry practice because it would be impossible to finance a project like Cape Wind almost exclusively with debt (Cape Wind Reply Brief at 17-18).

With regard to the likelihood of the Wind Outperformance Adjustment credit taking effect, Cape Wind claims that because the 37.1 percent capacity factor target represents the facility's average expected annual production, it is likely to surpass the target in approximately half the years of the term of PPA-1 (Cape Wind Brief at 34). Cape Wind contends that this provision is, therefore, likely to reduce the average cost of power delivered under PPA-1 (Cape Wind Brief at 34).

iii. Attorney General

The Attorney General asserts that the Financing-Adjusted Price provision protects National Grid's customers because it ensures that if debt costs are reduced below 7.5 percent, customers will share in the savings (Attorney General Brief at 18-20). The Attorney General claims that there will be significant savings to ratepayers if Cape Wind receives a DOE loan guarantee (Attorney General Brief at 18-20). According to the Attorney General, a recent geothermal project developed by Nevada Geothermal Power received such a guarantee and had a blended cost of debt at below five percent (Attorney General Brief at 19). The Attorney General contends that if Cape Wind achieves a debt cost of five percent, the resulting base contract price will be reduced to \$172.6 per MWh in the first year, saving approximately \$14 per MWh in the first year and \$135 million in NPV terms over 15 years (Attorney General

Brief at 19-20). The Attorney General asserts that, while she has not assessed the likelihood that Cape Wind will obtain a DOE loan guarantee, this provision of PPA-1 gives Cape Wind a financial incentive to pursue such guarantee (Attorney General Brief at 18-20).

The Attorney General asserts that the Cost-Adjusted Price provision will provide value to ratepayers in the event that actual project costs prove to be significantly below current estimates (Attorney General Brief at 20-21). The Attorney General claims that if costs are significantly reduced, this provision will prevent windfall profits to the developers (Attorney General Brief at 21). The Attorney General states that because PPA-1 is reasonably priced with respect to expected costs and rate of return, it is unlikely that the project will achieve an IRR greater than 10.75 percent (Attorney General Brief at 21, citing Exh. AG-JWJC-1, at 23).

The Attorney General refutes Alliance's assertion that the Cost-Adjusted Price provision may allow for an after-tax yield to equity investors of approximately 79 percent, stating that this assertion is unsubstantiated and would require the project to be financed almost entirely by debt (Attorney General Brief at 21 n.11). Without waiving her objections to the workpapers Alliance included as Appendix B of its brief, the Attorney General argues that Alliance's explanation of its model is insufficient because it does not provide the underlying assumptions, thereby raising more questions than it answers (Attorney General Reply Brief at 9-10).⁷⁰ Specifically, the Attorney General claims that Alliance has failed to provide any

⁷⁰ On October 20, 2010, the Attorney General filed a motion to strike Appendix B on the grounds that Alliance failed to show good cause for reopening the record. The Attorney General argues that Appendix B amounts to unsworn statements inappropriately submitted after the close of the record and presented for the first time on brief. D.P.U. 10-54, Attorney General Motion to Strike Sections of Alliance to

calculations underlying its ROE estimate, as well as any relevant model inputs or outputs (Attorney General Reply Brief at 7-10).

The Attorney General refutes Alliance's claim that, based on the Tax Credit-Adjusted Price provision, the price of PPA-1 will increase if Cape Wind applies for and receives a federal cash grant in lieu of the ITC (Attorney General Brief at 20). The Attorney General asserts that the Tax Credit-Adjusted Price provision is linked strictly to Cape Wind's eligibility for the ITC and not to its actually obtaining it (Attorney General Brief at 20). The Attorney General states that because the eligibility requirements for the cash grant are more stringent than those for the ITC, Cape Wind will not be eligible for the cash grant unless it is also eligible for the ITC (Attorney General Brief at 20).

The Attorney General claims that the potential price increase reflected in the Size-Adjusted Price arises from the loss in economies of scale associated with a decreased project size (Attorney General Brief at 14 n.5, citing Exh. AG-JWJC-1, at 25). The Attorney General contends, however, that even the Size-Adjusted Price would be comparable to other potential offshore wind projects (Exh. AG-JWJC-1, at 24-25).

iv. Alliance to Protect Nantucket Sound

Alliance asserts that it is impossible to determine the value of the Financing-Adjusted Price provision, noting that Cape Wind has yet to: (1) secure a lender; (2) obtain a credit

Protect Nantucket Sound's Initial Brief at 3 (October 20, 2010). In a separate Order, the Department granted the Attorney General's Motion to Strike. Interlocutory Order on: (1) Motions Of The Alliance To Protect Nantucket Sound To Reopen The Record; And (2) Motion Of The Attorney General To Strike, D.P.U. 10-54 (November 22, 2010).

rating; (3) obtain a DOE loan guarantee; or (4) provide its estimated costs (Alliance Reply Brief at 21). Alliance states that if any financing savings materialize, ratepayers will receive only 48.75 percent of the savings, and not 75 percent, because the total savings will be reduced by the value of the diminished interest expense tax deduction (Alliance Reply Brief at 21).

Alliance argues that because Cape Wind has objected to all discovery on information regarding its costs, it should not be allowed to ascribe any benefit to the Cost-Adjusted Price provision (Alliance Brief at 47). Alliance further argues that, as its witness testified, Cape Wind could earn an ROE of up to 79 percent without triggering this provision (Alliance Brief at 47-48).

According to Alliance, PPA-1 will make ratepayers the guarantors of the ITC and the PTC because the contract price will increase if Cape Wind fails to qualify for these tax credits (Alliance Brief at 32-33). Alliance argues that Cape Wind will not qualify for the ITC or PTC unless it is placed in service by December 31, 2012, and that even Cape Wind has acknowledged that this would require an aggressive construction schedule (Alliance Brief at 32). Alliance asserts that construction of Cape Wind will not begin any time soon, let alone in 2012 (Alliance Brief at 32-33).

Alliance asserts that a reduction in the size of the project is likely if Cape Wind is unable to find additional buyers, a fact that Cape Wind acknowledges (Alliance Brief at 33, 37). According to Alliance, Cape Wind's inability to find a buyer for PPA-2 makes it likely that the size of the project will be reduced significantly (Alliance Brief at 37). Thus, Alliance

contends that the resulting increase in the Base Price would substantially increase the amount of the project's above-market costs (Alliance Brief at 33, 37).

v. Department of Energy Resources

DOER states that while it cannot assess the likelihood of Cape Wind's reducing its cost of debt substantially below 7.5 percent, the provision will provide Cape Wind with a significant incentive to pursue those savings, because the Financing Adjusted Price provision allows Cape Wind to realize 25 percent of the resulting savings (DOER Brief at 21). Like the Attorney General, DOER argues that if Cape Wind achieves a cost of debt of five percent, it is reasonably likely that ratepayers will save about \$188 million in nominal dollars, or \$135 million in NPV (DOER Brief at 21, citing Exh. AG-JWJC-1, at 21).⁷¹

DOER states that it is difficult to predict whether the Cost-Adjusted Price provision, like the Financing-Adjusted Provision, will be triggered (DOER Brief at 21-22). DOER contends that, nonetheless, the Department should recognize it as an additional means of ensuring that PPA-1 is cost-effective (DOER Brief at 22). DOER states that the provision protects ratepayers against overpaying while maintaining an incentive for Cape Wind to reduce costs, and may reduce costs to ratepayers under some scenarios (DOER Brief at 21-22).

⁷¹ DOER appears to base its estimate upon the testimony of the Attorney General's expert witnesses, who found this provision to be worth approximately \$188 million (\$135 million in NPV at seven percent) if Cape Wind achieves debt financing at five percent (DOER Brief at 21, citing Exh. AG-JWJC-1, at 21).

c. Analysis and Findings

In order to evaluate the cost-effectiveness of PPA-1, the Department must first calculate the contract's above-market costs (i.e., the difference between the contract costs and the market value associated with the products). The Department examines the various contract price contingencies to determine a range of contract costs most likely to occur. In establishing the range of most likely costs, the Department looks to the factors that would be most likely to result in an increase or decrease in the PPA-1 2013 Base Price of \$187 per MWh.⁷² Based on the evidence in this proceeding, the Department identifies four scenarios that establish a reasonably likely range of costs, which we characterize as: (1) low-cost; (2) moderate low-cost; (3) moderate high-cost; and (4) high-cost. In examining the range of costs, we will express them in both nominal dollars and on an NPV basis. To determine the NPV values, we have employed a discount rate of seven percent, as used by National Grid and the Attorney General, and which we find reasonable (Exh NG-MNM at 21-22; Exh. AG-JWJC-1, at 21).

Both the low-cost and moderate low-cost scenarios assume that the facility will achieve its proposed maximum nameplate capacity of 468 MW and will be eligible for the ITC. The

⁷² We will not attempt to model the contract prices and costs that would result from a phase-in of the construction of the Cape Wind facility. While such a phase-in is possible, because of the relationship between the PPA-1 escalation rate and the discount rate used to express contract costs in NPV terms, any delay in the commercial operation of the facility will decrease the NPV of the contract costs. Furthermore, we will assume in this analysis that the entire facility is eligible or ineligible for the federal tax credits, rather than making assumptions about the number of phases and turbines that will achieve eligibility, because a blend of phases that are eligible and ineligible for tax credits will result in a specific contract cost that is included within the estimated range of contract costs assumed below.

difference between these two scenarios is based on assumptions about Cape Wind's financing. The low-cost scenario assumes that Cape Wind achieves favorable debt financing terms (i.e., through a DOE loan guarantee) and thus obtains debt at a cost of five percent,⁷³ thereby triggering the Financing-Adjusted Price provision of PPA-1. In contrast, the moderate low-cost scenario assumes no such adjustment and, instead, assumes the 2013 Base Price of \$187 per MWh. The moderate high-cost and high-cost scenarios both assume that: (1) the facility's nameplate capacity is reduced and the Size-Adjusted Price provision increases the price to \$193 per MWh;⁷⁴ (2) there are no reductions because of the Financing-Adjusted Price or Cost-Adjusted Price provisions; and (3) the facility is not eligible for the ITC. The difference between these two scenarios is that the moderate high-cost scenario assumes that Cape Wind is eligible for the PTC, while the high-cost scenario assumes that Cape Wind is not eligible for either the ITC or PTC. The Department calculates the 2013 base prices for these scenarios as: (1) low-cost, by incorporating the \$172.60 per MWh estimated by the Attorney General;⁷⁵ (2) moderate low-cost, by incorporating the base price from Exhibit NG-MNM-2

⁷³ While the facility may achieve a debt financing rate below five percent, we find this to be unlikely to occur and have not factored it into our assumptions to develop the range of likely contract costs (see Tr. 11, at 2256-57; Tr. 13, at 2765-2766).

⁷⁴ Each one-MW reduction in the facility's nameplate capacity will increase the Base Price by \$0.0833 per MWh until a cap of \$193 per MWh is reached (PPA-1, exh. E, App. X, ¶ 1).

⁷⁵ The Attorney General developed her own estimate of the base price for 2013 by assuming that the Financing-Adjusted Price provision is triggered by the Cape Wind facility achieving a five percent cost of debt, thereby lowering the base price. The Attorney General did not, however, assume this base price and then merely escalate it

(Supp.); (3) moderate high-cost, by incorporating the \$193 per MWh price multiplied by a factor of 1.10145; and (4) high-cost, by incorporating the \$193 per MWh price multiplied by a factor of 1.13526.⁷⁶ The 2013 base prices are then escalated at 3.5 percent per year and multiplied by an annual output of 760,497 MWh,⁷⁷ to arrive at contract costs for each year (see PPA-1, exh. E, App. X, ¶ 1; Exh. NG-MNM (Supp.) at 4). Annual contract costs are then summed to arrive at nominal contract costs and discounted at seven percent to determine NPV costs. Table 1, below, summarizes the values as a range of likely contract costs.

by 3.5 percent per year. Instead, she made further assumptions for triggering events during the 15-year contract and, as a result, her estimated prices are non-linear.

⁷⁶ While the Settlement revised the Base Price, it did not specify new prices if the facility is ineligible for either federal tax credit. Thus, the factors used as multipliers in scenarios 3 and 4 (i.e., 1.10145 and 1.13526) were calculated by National Grid to ensure that, in the event that the facility is not eligible for the ITC or the PTC, the revised price terms maintain the same proportions and same sharing of risk to customers and Cape Wind as the original price terms.

⁷⁷ 760,497 MWh is the rounded-up annual output figure provided by the Company in Exhibit DPU-NG-9-1(e). The Company calculated the amount by multiplying 468 MW by 50 percent of PPA-1 by 37.1 percent capacity factor by 8,760 hours in a year.

Table 1: Range of Likely Contract Costs

Scenario	Assumptions			Contract Price (\$/MWh)		Contract Costs (in millions)	
	Facility Size	Tax Credit Eligibility	Cost of Debt	2013 Base Price	Levelized Price ⁷⁸	Nominal	Net Present Value
Low-Cost	Full Size	ITC & PTC	5%	\$172.60 ⁷⁹	\$212.67	\$2,533	\$1,473
Moderate Low-Cost	Full Size	ITC & PTC	7.5%	\$187.00	\$230.41	\$2,744	\$1,596
Moderate High-Cost	Reduced Size	PTC	7.5%	\$212.58	\$261.93	\$3,119	\$1,814
High-Cost	Reduced Size	No ITC or PTC	7.5%	\$219.11	\$269.97	\$3,215	\$1,870

In establishing these scenarios, we recognize that contract costs may be further reduced by the Cost-Adjusted Price provision, the Wind Outperformance-Adjustment credit, and the Most Favored Nation Clause, but the likelihood and magnitude of these adjustments is uncertain. Accordingly, we decline to estimate their effect for inclusion in our determination of a reasonably likely range of contract costs. We will, however, address the extent to which these provisions may provide benefits to National Grid's ratepayers in Section VII.D, below.

⁷⁸ To present the contract costs as a single value, the stream of constant, levelized base price produces the same NPV for contract costs over the term of PPA-1 as the stream of base prices, subject to the escalation factor, that would be in effect during each year of the contract (see Exhs. AG-NG-2-13 (Att.); DPU-NG-10-5 (Att.)).

⁷⁹ See Exh. AG-JWJC-1, at 20. The Department used the Attorney General's estimate of the 2013 Base Price, which includes a five percent cost of debt, for the low-cost scenario and we escalated it by 3.5 percent per year, pursuant to PPA-1, App. A., exh. E, App. X. This is different from the annual base prices estimated by the Attorney General for later years because she includes more assumptions than just a low cost of debt (cf. Exhs. AG-JWJC-1, at 20-21; AG-JWJC-4).

As Table 1 shows, across the four scenarios, the contract costs range from \$2.5 to \$3.2 billion in nominal dollars and from \$1.5 to \$1.9 billion on an NPV basis.⁸⁰ The low-cost scenario assumes that Cape Wind will receive debt financing at five percent, but there is insufficient information on the record to indicate whether Cape Wind is likely to obtain this debt financing rate. Specifically, the Attorney General estimated the base price that would result if Cape Wind receives a DOE loan guarantee and a five percent debt financing rate but she did not assess the likelihood that this would happen (Exh. AG-JWJC-1, at 21; Tr. 11, at 2256-2257). While the Financing-Adjusted Price provision provides Cape Wind with the incentive to pursue the lowest possible debt financing terms and Cape Wind may indeed receive a DOE loan guarantee, we cannot rely on this opportunity in calculating a reasonable range of contract costs. Instead, we will treat the Financing-Adjusted Price provision like the Cost-Adjusted Price provision, Wind Outperformance Credit provision, and Most Favored Nation Clause, and address what, if any, benefits it provides to National Grid's ratepayers in Section VII.D, below.

The high-cost scenario assumes that Cape Wind will not be eligible for the PTC. Although the PTC will expire on January 1, 2013, Congress has renewed the PTC several times since it was first created by the Energy Policy Act of 1992 and we find that it is reasonable to assume that Congress will renew the PTC. Therefore, in determining a

⁸⁰ For the remainder of this section, PPA-1 costs will be expressed in NPV terms.

reasonably likely range of contract costs, we exclude the possibility that Cape Wind will be ineligible for the PTC.⁸¹

We conclude that the moderate low-cost and moderate high-cost scenarios define the range of most likely costs. The two key differences between the moderate low-cost and moderate high-cost scenarios relate to the size of the facility and its eligibility for the ITC. The moderate low-cost scenario assumes a full-sized facility that is eligible for the ITC, and the moderate high-cost scenario assumes a smaller-sized facility that is ineligible for the ITC. Thus, our evaluation of the cost-effectiveness of PPA-1 will focus on the range of contract costs represented in the two moderate cost scenarios discussed above.

While we have expressed costs above in both nominal dollars and on an NPV basis to examine the range of costs, in order to simplify the comparison of contract costs with contract benefits over the 15-year term of PPA-1, we will use NPV, with the discount rate of seven percent used by National Grid and the Attorney General to express values for the remainder of this Order (Exhs. NG-MNM at 21-22; AG-JWJC-1, at 21). As shown in Table 1, the resulting range of contract costs, in NPV terms, is between \$1.6 and \$1.8 billion.

⁸¹ As shown in Table 1, if the PTC is not extended, the contract costs will total \$3.215 billion (nominal) and \$1.870 billion (NPV).

2. Other Costs
 - a. Positions of the Parties
 - i. National Grid⁸²

National Grid states that because the addition of any generation resource on the system will call for some level of ancillary services, the costs of which are exceedingly difficult to quantify, it did not specifically study the effects or costs that may be associated with ancillary services for the Cape Wind facility or PPA-1 (Exh. DPU-NG-5-7, at 9-10). National Grid observes that system operators around the country are studying the effects of adding intermittent generating resources like wind and solar on system operating requirements, including ancillary services (Exh. DPU-NG-5-7, at 6). National Grid also reviewed the NYISO study as well as a study of the electric system in the eastern United States that examined the effects on system reliability of introducing intermittent resources in amounts roughly equal to 20 to 30 percent of an electric system's total energy (Exh. DPU-NG-5-7, at 6-9).⁸³ National Grid notes that while variable energy resources such as wind and solar will increase the need for and use of certain types of ancillary services, neither study is representative of what would reasonably be expected from the addition of a 468 MW wind facility to the New England system (a system of approximately 32,666 MW) (Exh. DPU-NG-5-7, at 9). National Grid states that it expects any additional ancillary service

⁸² While not discussed in initial or reply briefs, National Grid, Cape Wind, and Alliance offered testimony and evidence in this proceeding about whether the Cape Wind facility will result in other costs not directly related to PPA-1.

⁸³ National Grid cites a study by the National Renewable Energy Laboratory, Eastern Wind Integration and Transmission Study (January 2010) (Exh. DPU-NG-5-7, at 8).

requirements and costs associated with the Cape Wind facility to be “small”

(Exh. DPU-NG-5-7, at 10).

ii. Cape Wind

Cape Wind addresses whether its facility will necessitate additional ancillary services and associated costs for ISO-NE, calling Alliance’s claims about high additional costs “baseless” (Exh. CW-RBS-9, at 9). Cape Wind states that adding its facility to the regional electric system will result in little or no integration costs and, in any event, such costs will be lower than alternative renewable supply options reviewed in any appropriate comparative analysis (Exh. CW-RBS-9, at 9-10). Cape Wind notes that because the variability of output from offshore wind is lower than other renewable resources it is less likely to necessitate additional regulation on an electric system, and adding 100 MW of offshore wind would raise the average regulation requirement by less than one MW (Exh. CW-RBS-9, at 61-62). Cape Wind asserts that while it is possible that the integration of its facility may require ISO-NE to increase regulation of the system, the additional costs to National Grid ratepayers will be negligible (Exh. CW-RBS-9, at 60; Tr. 3, at 710). Cape Wind further contends that its facility will reduce the net commitment period compensation charges (i.e., uplift charges) that are currently passed on to New England electricity customers, savings that have not been included in its price suppression or market value analyses (RR-DPU-CW-6, citing Exhs. CW-RBS-3; CW-RBS-8).

iii. Alliance to Protect Nantucket Sound

Alliance testified that because of the facility's intermittent generation, integrating it into the regional electric grid will result in substantial additional costs associated with providing two types of ancillary services:⁸⁴ (1) operating reserves, which are typically provided by generators that are able to initiate or increase their output within ten to 30 minutes to meet an unscheduled outage by another generator or transmission facility; and (2) regulation, which is provided by generators that can instantly increase or decrease their output in response to real-time signals from the system operator and enable the balancing of varying electricity supply and demand (Exhs. APNS-JAL at 16-17; APNS-TM at 10-16; CW-RBS-9, at 56; Tr. 6, at 1226). Alliance acknowledges that it did not specifically study the effect of the Cape Wind facility on the ancillary service requirements of the New England electric system, but states that it relies on a study performed on behalf of the New York Independent System Operator ("NYISO"), which analyzed the effect of existing wind resources (approximately 1,250 MW) on its approximately 38,200 MW electric system and estimated the future effects of increased wind resources (approximately 3,000 to 8,000 MW) on the system (Exhs. APNS-TM at 12; CW-APNS-1-6 (Supp.); CW-APNS-1-5; Tr. 6, at 1216-1219, 1225-1226, 1237-40).⁸⁵

⁸⁴ The term "ancillary services" refers to the array of functions, systems, procedures, and services that are needed to support the reliable provision of electricity on the power system (Exh. DPU-NG-5-7, at 1-2). See also G.L. c. 164, § 1 (Definitions).

⁸⁵ Alliance cites the NYISO Wind Study Workshop, Wind Integration Study: Study Results and Final Report, Final Draft (June 18, 2010) (Exh. APNS-TM at 12 n.3).

b. Analysis and Findings

Today, there are approximately 200 MW of wind resources integrated into the approximately 32,666 MW New England electric system (Exhs. CW-RBS-9, at 60; DPU-NG-5-7, at 10). The Cape Wind facility would represent an additional 468 MW of wind, at most, on the ISO-NE system. No party conducted a detailed study about whether the addition of the Cape Wind facility, like all generation, will necessitate additional ancillary services for the simple reason that such a factor is exceedingly difficult to monetize. Nonetheless, we find that the results of the NYISO study are instructive on this issue.

According to the NYISO study, integrating large amounts of wind resources (i.e., approximately 3,000 to 8,000 MW) into an approximately 38,200 MW electric system will require increased regulation (Exh. DPU-NG-5-7, at 7-9). The NYISO study found, however, that New York's existing generation fleet is well able to accommodate its existing 1,250 MW of wind resources and even the increased wind resources assumed in the study (Tr. 12, at 2417-2418; see also Exh. DPU-NG-5-7, at 7). NYISO concluded that it can successfully integrate up to 8,000 MW of wind resources into its system without necessitating significant increases in ancillary and reserve requirements (Exh. DPU-NG-5-7, at 7-9). Thus, the results of the NYISO study suggest that integrating a single 468 MW facility into ISO-NE's 32,666 MW electric system is unlikely to necessitate any increases in ancillary and reserve requirements. In addition, while it is possible that the integration of a large intermittent renewable facility may require ISO-NE to increase regulation of the system, Cape Wind has testified that its offshore wind facility is likely to have even less of an effect on the system

because its output is less variable than other renewable resources and that any associated costs would be negligible (Exh. CW-RBS-9, at 60-62; Tr. 3, at 689-690, 710). This persuades us that, even if constructed at its maximum nameplate capacity of 468 MW, the Cape Wind facility is likely to necessitate only a negligible amount of ancillary services or associated costs. In addition, while we believe that the facility is likely to be constructed at its maximum nameplate capacity of 468 MW, if it were constructed somewhat smaller, the costs, if any, associated with integrating fewer MW of power into the electric system would be even smaller.

Also, in studying the effects of the Cape Wind facility's integration into the regional electric system in its interconnection study, ISO-NE determined that the facility will have no adverse impact on the reliability of the electric system (Exhs. DPU-CW-3-1, at 1; DPU-CW-3-2(a)(Att.); DPU-NG-5-5; Tr. 3, at 681-682). While ISO-NE's study did not specifically analyze costs, its conclusion of no adverse impact confirms that integration of the Cape Wind facility is likely to create the need for only a negligible amount of ancillary services and associated costs.

In sum, the record indicates that ratepayers will incur negligible costs for ancillary services, if any, as a result of the integration of the Cape Wind facility to the ISO-NE system. Therefore, the Department will not include any additional costs associated with ancillary services in our review of PPA-1's cost-effectiveness.

D. Benefits

1. Introduction

We consider the benefits to ratepayers, beginning with the value that National Grid will receive from the energy, capacity, and RECs purchased through PPA-1. We then analyze other potential benefits, including those associated with price suppression, hedging and price certainty, compliance with the Commonwealth's renewable energy and environmental requirements, reliability, moderation of peak load, and employment.

2. Market Value

a. Introduction

Under PPA-1, Cape Wind will sell and deliver to National Grid three products associated with the output of the facility: (1) energy; (2) capacity; and (3) RECs. National Grid states that it will retain the energy and RECs for its own use (see Section XI, below). Thus, to estimate the associated benefits that National Grid ratepayers will receive under PPA-1, we must determine their value. The parties forecasted market prices and output from the Cape Wind facility to develop estimates of the market value of PPA-1.

The parties presented three forecasts of market value. National Grid provided forecasts by Energy Security Analysis, Inc. ("ESAI"),⁸⁶ and Levitan & Associates, Inc. ("Levitan").

Levitan provided its forecast in March 2010 to the four Massachusetts electric distribution

⁸⁶ In January 2010, National Grid received ESAI's forecast pursuant to an ongoing contractual relationship and in preparation for its negotiations with Cape Wind (Exh. NG-MNM at 23-24). National Grid initially commissioned ESAI to develop a long-term REC supply and price forecast for the Deepwater Wind proceeding before the Rhode Island Public Utilities Commission. ESAI updated its forecast for use in this proceeding (Exh. NG-MNM at 23).

companies as part of the first joint statewide solicitation for long-term contract proposals pursuant to Section 83 (Exh. NG-MNM at 23-24). Cape Wind submitted a forecast prepared by Charles River Associates (“CRA”).⁸⁷

b. Description of Market Value Forecasts

i. Introduction

Each of the three market value forecasts provides separate value projections for energy, capacity, and RECs. As mentioned above, the forecasted prices are evaluated together with projections of output from the Cape Wind facility to estimate market value. Table 2, below, summarizes these market value forecasts. National Grid provided the total market value forecasts from ESAI and Levitan for the public record of this proceeding, and the Department granted confidential treatment of the separate forecasts of the prices of each market product (i.e., energy, capacity, and RECs). Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, D.P.U. 10-54, Hearing Officer Ruling on Confidentiality at 8 (July 15, 2010). The Department has protected the minimum amount of information necessary and required the submission of both redacted and unredacted copies of materials. See G.L. c. 25, § 5D; 220 C.M.R. § 1.04(5)(e). Accordingly, the Department has carefully considered the imbedded assumptions and resulting prices for energy, capacity, and RECs but will not discuss them here in precise detail.

⁸⁷ In May 2010, Cape Wind retained CRA to assess the reasonableness of the terms of PPA-1 and PPA-2 in the context of market prices (Exh. CW-RBS-1, at 3, 13-14).

To develop their forecasts of prices for energy, capacity, and RECs, each forecast contains assumptions about numerous influential energy market factors, including: (1) demand for electricity; (2) natural gas prices; (3) publicly-traded future contracts; (4) costs of emissions allowances for air pollutants such as nitrogen oxide (“NO_x”), sulfur oxide (“SO_x”), and carbon dioxide (“CO₂”).

Table 2: Estimated Market Value of PPA-1⁸⁸

Forecast Source	Market Value (Million \$)	
	Nominal Dollars	NPV at 7%
ESAI	\$1,753	\$1,032
Levitan	\$1,500	\$881
CRA	\$2,805	\$1,632

As shown in Table 2, above, the CRA market value forecast is significantly higher than the forecasts produced by ESAI and Levitan. As discussed below, this is primarily due to CRA’s inclusion of higher natural gas price projections,⁸⁹ which results in significantly higher forecasts of value from the energy market, as well as substantial demand and high price projections for RECs. In addition, ESAI’s and Levitan’s forecasts produce a range of market values because they include two slightly different projections of energy market value and use different methods to determine future REC prices.

⁸⁸ Table 2 is based on information from Exhibit NG-MNM-2 (Supp.) and Record Request DPU-CW-8.

⁸⁹ CRA also assumes that emissions allowance prices are higher than those assumed by ESAI and Levitan.

ii. Energy Market Value

(A) Introduction

ESAI, Levitan, and CRA each employed a two-step process to determine energy market prices and resulting market value (Exh. DPU-NG-9-1; RR-DPU-CW-8 (Att.)). First, they calculated hourly prices in the ISO-NE energy market for each hour of the year (Exh. DPU-NG-9-1; RR-DPU-CW-8 (Att.)). Second, they aggregated the hourly market prices, and multiplied the aggregated prices by the projected output of the Cape Wind facility to determine energy market value (Exh. DPU-NG-9-1; RR-DPU-CW-8 (Att.)).

(B) Calculation of Energy Market Prices

ESAI, Levitan, and CRA all used production cost modeling to predict future energy prices in New England (Exhs. NG-MNM at 24-25; DPU-NG-9-2 (Att. at 3) (Confidential); DPU-NG-9-3, at 2-3 (Confidential); CW-RBS-3, at 2). A production cost model simulates the security-constrained economic dispatch of energy generation resources to meet forecasted energy demand such as to minimize the cost of reliably serving load. A production cost model forecasts a price for each hour at selected locations in New England. ESAI and Levitan forecasted prices at the Southeastern Massachusetts Load Zone (“SEMA”) (Exhs. NG-MNM at 24; DPU-NG-9-1). CRA determined prices for all ISO-NE load zones and used the Massachusetts Hub as a proxy for a weighted average price across the zones where National Grid customers are located (Exh. DPU-CW-5-8).

The assumptions that ESAI, Levitan, and CRA used in their production cost models directly affected the energy market prices in their forecasts (Tr. 8, at 1690-1691). Table 3 compares ESAI, Levitan, and CRA's models and key assumptions.

Table 3: Comparison of Energy Market Forecasting Model Assumptions⁹⁰

	Model	Load Forecast⁹¹	Natural Gas	CO₂ Emissions	SO_x and NO_x Emissions
ESAI	Proprietary ESAI Model	CELT 2009	Based on publicly-traded futures contracts	Federal Cap-and-Trade requirement in 2013	Based on publicly-traded futures contracts and technology costs
Levitan	MarketSym	CELT 2009	Based on publicly-traded futures contracts	Federal Cap-and-Trade requirement in 2014-2015	Based on publicly-traded futures contracts and proposed regulations and legislation
CRA	GE MAPS	CELT 2009	Double the levels included in the EIA's 2009 Annual Energy Outlook	Federal Cap-and-Trade requirement in 2013 ⁹²	Based on Carper-Alexander bill ⁹³

⁹⁰ Sources: Exhs. CW-RBS at 10-11, 13-14; NG-MNM at 24-25; NG-MNM-6, at 3, 8, 9; AG-NG-2-16 (Att. 4, at 9, 11, 12) (Confidential); DPU-CW-4-2; DPU-CW-4-3; DPU-CW-5-7 (Att. B at 5); DPU-NG-6-2 (Confidential); DPU-NG-9-2 (Att. at 4) (Confidential); DPU-NG-9-3 (Confidential); DPU-NG-9-4; and DPU-NG-9-5.

⁹¹ ESAI, Levitan, and CRA all used ISO-NE's 2009 Capacity, Energy, Loads and Transmission Report ("CELT 2009").

⁹² CRA assumes that a federal CO₂ policy similar to the Kerry-Lieberman bill will be in place by 2013. Discussion Draft of the American Power Act (May 12, 2010), available at <http://kerry.senate.gov/imo/media/doc/APAbill3.pdf>.

⁹³ The Carper-Alexander bill, which remains draft legislation, is entitled "Clean Air Act Amendments of 2010," S.2995, 111th Cong. (2010).

As illustrated in Table 3, ESAI, Levitan, and CRA took different approaches to estimate energy market prices, based on their models and assumptions. The primary difference between ESAI's and Levitan's forecasts and the CRA forecast is the assumptions for future natural gas prices. While ESAI and Levitan used information from publicly-traded contracts as the basis for their natural gas price forecasts, CRA used a high fuel price sensitivity scenario from ISO-NE's 2030 Power System Study, which included projections of natural gas prices that were twice as high as EIA's 2009 Annual Energy Outlook⁹⁴ ("EIA 2009 Outlook"). Because of this difference, as discussed further below, the ESAI and Levitan forecasts can be characterized as "base case" scenarios, and the CRA forecast can be characterized as a "high case" scenario.

(C) Calculation of Energy Market Value

The energy forecasting models produced hourly prices, which ESAI, Levitan, and CRA each aggregated and multiplied by the projected output of the facility to estimate the energy market value that National Grid would receive under PPA-1. The parties presented two approaches. The "7x24" approach refers to the aggregation of hourly market prices into an annual market price, which is then multiplied by the projected annual output of the facility, based on its projected capacity factor of 37.1 percent (Exh. DPU-NG-9-1, at 2).⁹⁵ The

⁹⁴ ISO-NE, New England 2030 Power System Study: Report to the New England Governors at 9 (February 2010), available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/2010/economicstudyreportfinal_022610.pdf.

⁹⁵ The annual average price resulting from the 7x24 approach may or may not be a load-weighted average of hourly prices. While not defined in the record, a

“monthly” approach refers to the aggregation of hourly market prices into peak and off-peak values for each month of the year, which are then multiplied by the respective projected monthly peak and off-peak output of the facility (Exh. DPU-NG-9-1, at 2; Tr. 5, at 1052-1053). ESAI and Levitan produced forecasts of energy market value using both the 7x24 approach and the monthly approach, while the CRA forecast used only the 7x24 approach (Exh. NG-MNM-2 (Supp.)).

iii. Capacity Market Value

To prepare their capacity market price forecasts, ESAI, Levitan, and CRA each analyzed the market fundamentals of ISO-NE’s FCM. ESAI’s, Levitan’s, and CRA’s forecasts of the capacity market are based on projections of clearing prices from the FCM,⁹⁶ multiplied by a projection of FCM-qualified capacity from the Cape Wind facility (Exhs. NG-MNM-3, at 12-13 (Confidential); NG-MNM-4, at 26-36 (Confidential); DPU-NG-9-2 (Att. at 6) (Confidential); AG-NG-2-16 (Att. 4 at 14) (Confidential); RR-DPU-CW-8). In developing their capacity market price forecasts, ESAI, Levitan, and CRA included peak load forecasts, publicly-disclosed historical bid patterns, projected capacity additions and retirements, market rules and ongoing changes to market rules, opportunities in neighboring control areas, and

load-weighted average price here is an average that has been weighted by the magnitude of the historically observed or forecasted demand during the single hour in the year, or one out of 8,760 hours, to help find the average price for a longer time period. ESAI and CRA use a load-weighted average, while Levitan uses an unweighted average (Exhs. DPU-NG-9-1, at 1; DPU-CW-5-7, at 5; RR-DPU-CW-8).

⁹⁶ FCM clearing prices are expressed as a single price for a twelve-month period, in dollars per kilowatt (“kW”) per month (Exhs. NG-MNM-3, at 12-13 (Confidential); NG-MNM-4, at 26-36 (Confidential); RR-DPU-CW-8 (Att.)).

estimates of the cost-of-entry for new capacity resources (Exhs. DPU-NG-9-2 (Att. at 6) (Confidential); AG-NG-2-16 (Att. 4, at 14) (Confidential); DPU-CW-5-7).⁹⁷ CRA's capacity market price forecast represents a high case of additions and retirements, which it believes is likely to represent future market conditions (Exh. DPU-CW-5-7, at 5).

iv. REC Market Value

ESAI, Levitan, and CRA developed forecasts of REC prices by analyzing market fundamentals (i.e., supply and demand conditions) (Exhs. DPU-NG-9-2, at 7 (Confidential); NG-MNM at 25; DPU-CW-1-13 (Att. at 9)). ESAI and Levitan used significantly different methods from one another to develop their forecasts of REC supply and demand conditions in New England over the term of the PPA-1, which resulted in divergent REC price forecasts (Exhs. NG-MNM at 25; DPU-NG-9-2 (Att. at 7) (Confidential); DPU-NG-9-3, at 2-4 (Confidential); AG-NG-2-16, at 15-17 (Att. 4) (Confidential)). ESAI projected the supply of RECs based upon the renewable energy projects in the ISO-NE generator interconnection queue and the historical percentage of projects from the queue that have proceeded to commercial operation, and determined that a gap between supply and demand of RECs will develop beginning in 2014, and will widen slowly as new sources of REC supply are outpaced by accelerating demand on account of increased RPS requirements and load growth

⁹⁷ CRA used a proprietary model that incorporates FCM fundamentals, market rules, and the potential for imports and exports with the NYISO's installed capacity market (Exh. DPU-CW-5-7, at 5).

(Exh. NG-MNM-5, at 9, 11-15, 17).⁹⁸ ESAI's forecast of REC prices reflects this projected shortfall (Exh. DPU-NG-9-2, at 8).

In contrast, Levitan assumes that an equilibrium between supply and demand will be reached every year of the forecast period of 2013 to 2027 (i.e., the supply of renewable energy will meet the demand and, thus, no gap between supply and demand will develop) (Exhs. NG-MNM at 25; NG-MNM-2; Tr. 5, at 1056; Tr. 13, at 2674 (Confidential)). Levitan based its forecast of REC prices on an estimated revenue requirement for a generic renewable energy generation resource, net of its forecasted revenue from energy and capacity markets (Exhs. NG-MNM at 25; DPU-NG-9-3, at 4 (Confidential); AG-NG-2-16 (Att. 4, at 16-17) (Confidential)).

Finally, CRA based its forecast of REC prices on a Bloomberg New Energy Finance ("Bloomberg") study, which indicates that New England will have the largest supply-demand imbalance in the nation between 2014 and 2030 (Exhs. CW-RBS-1, at 14; CW-RBS-4; DPU-CW-1-13 (Att. at 12)). To develop REC prices, CRA chose a price from the Bloomberg

⁹⁸ ESAI estimates that almost 600 MW of new wind-equivalent resources need to be added each year to meet demand, but that only approximately 350 MW per year will reach commercial operation (Exh. NG-MNM-5, at 8, 17). To develop its "wind equivalent" value and estimate of the supply of RECs that will be needed, ESAI converts the annual output of various renewable resources into a generic renewable resource with a 25 percent capacity factor, which is a representative number for onshore wind (Exh. NG-MNM-5, at 8 n.2).

study that it viewed as representative and then escalated the price by inflation over the forecast period (Exh. CW-RBS-1, at 14 & n.5).⁹⁹

c. Positions of the Parties

i. National Grid

National Grid argues that ESAI's and Levitan's forecasts of energy, capacity, and REC prices are equally valid (Exh. NG-MNM at 26; Tr. 5, at 1056). According to National Grid, ESAI's and Levitan's methods of developing energy and capacity price forecasts are similar and their methods of developing REC forecasts are different (Exh. NG-MNM at 25). National Grid asserts that Levitan's energy price forecast is higher than ESAI's, and ESAI's forecast of REC prices is higher than Levitan's (Exh. NG-MNM at 25). National Grid contends that the presentation of energy market values using the monthly approach is more accurate than the 7x24 approach (Tr. 5, at 1053-1054). Based on the market revenue forecasts provided by ESAI and Levitan, National Grid estimates that the net present value of the above-market cost of energy, capacity and RECs will be between \$734 million and \$885 million during the initial term of PPA-1 (Exhs. NG-MNM at 21-22, NG-MNM-2 (Supp.)).

In response to Alliance's criticism of ESAI's and Levitan's price forecasts, National Grid claims that the forecasts were developed using reasonable methods and assumptions (Exh. NG-MNM-R at 12). National Grid maintains that it sought to provide a reasonable estimate of above-market payments and Alliance has not offered its own forecast

⁹⁹ The Bloomberg study shows prices fluctuating between \$50 per MWh and \$60 per MWh per year, without further specification. Thus, CRA assumed a REC price of \$55 per year, escalated by inflation (Exh. CW-RBS at 14 n.5).

(Exh. NG-MNM-R at 12-13). According to National Grid, although Alliance claims that the forecasts are too high, other parties have declared them to be too low (Exh. NG-MNM-R at 13). National Grid acknowledges the uncertainty inherent in developing forecasts of market prices but asserts that it has obtained two independent forecasts reflecting likely conditions and assumptions and that these result in a reasonable prediction of future market prices for energy, capacity, and RECs (Exh. NG-MNM-R at 13; see Tr. 5, at 1054-1055).

ii. Cape Wind

Cape Wind asserts that CRA's forecast is the most reasonable one to use because current market conditions are not likely to represent electricity prices over the long term (Cape Wind Brief at 28-31). Cape Wind asserts that using the most likely market conditions will understate PPA-1's value because energy prices will not stay at their current, unusually low levels indefinitely (Cape Wind Brief at 28-31). Cape Wind asserts that forecasts of energy prices have generally underestimated future energy prices, which means that current forecasts of a "base case" likely understate future market prices and that it is much more likely that prices will be higher instead of lower than the forecasts (Cape Wind Brief at 28-31).

To support its analysis, Cape Wind states that CRA's forecast relies on fuel price assumptions developed by ISO-NE with the active participation of state and industry participants, and that the analysis reflects costs for environmental allowances and power plant retirements that are consistent with expected policy changes (Cape Wind Brief at 30-31). Cape Wind asserts that historical experience in Massachusetts energy markets has involved fuel cost volatility, rapidly increasing basic service rates, and rising inflation levels, noting that: (1) the

spot market price of natural gas at the Algonquin gate increased approximately four-fold between 1999 and 2008; (2) basic service rates almost doubled in the five years prior to the enactment of the Green Communities Act; and (3) during the ten years prior to the enactment of the Green Communities Act, basic service rates escalated at a compound annual growth rate of 15.5 percent (Cape Wind Brief at 30-31).

Cape Wind addresses Alliance's view that market prices should be based on a snapshot of current conditions (i.e., 2009 prices), arguing that Alliance fails to account for expected trends in energy markets (Cape Wind Reply Brief at 12-13). Cape Wind asserts that to compare long-term renewable energy pricing to a one-year look at short-term pricing would be inconsistent with Section 83 and its requirement that long-term contracts be cost-effective over the long term (Cape Wind Reply Brief at 11-12). Finally, Cape Wind notes that no party offered an analysis that contradicted the analysis presented by National Grid (Cape Wind Reply Brief at 11-12).

iii. Alliance to Protect Nantucket Sound

Alliance asserts that market value can be determined using the sum of: (1) the average all-in electric market price (which includes energy, capacity, and ancillary services); and (2) the price of Class I RECs (Alliance Brief at 14). For 2009, the all-in electric market price was equal to \$58.36 per MWh, while Class I REC prices ranged from \$15.50 to \$41.50, resulting in a combined energy market value of between \$74 per MWh and \$100 per MWh.

Alliance asserts that CRA's forecast of market prices is unreliable because it: (1) relies on ISO-NE's sensitivity analysis rather than its baseline forecast, which was approximately

\$60 per MWh to \$75 per MWh lower, and ISO-NE's updated 2010 baseline forecast is an additional \$3 per MWh to \$20 per MWh lower; (2) assumes only 100 MW of new wind generation resources each year, less than one-third of the new wind generation resources assumed by ESAI, which also underestimates additions of renewable supply; and (3) fails to address the impacts of fuel prices and CO₂ prices on overall load growth, even though CRA assumes that gas prices are double the EIA's forecasted prices (Alliance Brief at 30-31).

Alliance argues that all of the forecasts presented overestimate REC market prices (Alliance Brief at 28-30). Specifically, Alliance claims that ESAI's forecast understates future supplies of renewable energy because as the demand for RECs (and resulting market price) increases over time, the economic incentive to develop new renewable resources will also increase (Alliance Brief at 28-30). Alliance argues that the most accurate indicators of future REC values are the prices resulting from trades in the Chicago Climate Futures Exchange, and that the Department can compare these price trends to ESAI's and Levitan's forecasts (Alliance Brief at 28-30).

Finally, Alliance asserts that National Grid and Cape Wind have failed to account for the flip-side of their claims that the Cape Wind facility will have a high capacity factor that will be coincident with system peak. Specifically, Alliance argues that if the facility has a higher capacity factor during times of low load, spot market prices will be low and ratepayers will purchase greater amounts of overpriced wind energy (Alliance Brief at 42, citing Tr. 12, at 2628).

iv. Department of Energy Resources

DOER asserts that the Department should consider what it calls National Grid's "base estimates" and Cape Wind's "high cost estimates" of future REC market prices (DOER Brief at 16 n.12, 44-45). DOER argues that National Grid's base estimates depend upon predictions of fossil fuel prices, which have consistently underestimated increases in fuel prices in the past (DOER Brief at 16 n.12). DOER also claims that Cape Wind's high cost estimates reflect a realistic risk of higher fuel costs in the future, incorporating the common experience that when natural gas price forecasts are wrong, it is because they understate future costs (DOER Brief at 44-45). DOER argues that the Department has discretion to factor in the possibility that fuel prices may be higher than expected in New England during the term of PPA-1 the Department should accord substantial weight to the high cost forecast presented by Cape Wind (DOER Brief at 44-45).

d. Analysis and Findings

i. Wholesale Energy and Capacity Market Value

The forecasts of energy prices produced by the ESAI, Levitan, and CRA are determined largely by their key assumptions.¹⁰⁰ ESAI and Levitan use similar key assumptions and produce similar energy and capacity price forecasts.

Levitan's energy price forecasts are slightly higher than ESAI's and the two capacity price forecasts are very similar. In contrast, CRA uses assumptions that are higher than current market conditions in order to simulate a high price scenario for energy and capacity

¹⁰⁰ The Department will address the estimates of energy and capacity market value together because both products are traded in the wholesale market.

markets, including: (1) projected natural gas prices that are double the prices of the EIA 2009 Outlook; (2) high emissions allowance prices for its energy price forecast; and (3) in its capacity price forecast, aggressive expectations regarding capacity retirements and additions (Exhs. CW-RBS-1, at 13-14; DPU-CW-5-7; DPU-CW-4-2). As a result, CRA's forecast of energy and capacity market value is higher than both the ESAI and Levitan forecasts.

Together, the three forecasts establish a range of energy and capacity market prices associated with the output of the Cape Wind facility. In order to determine which price forecasts to rely on, the Department must determine which forecasts reflect the most likely future market conditions. The Department recognizes the uncertainties inherent in these types of forecasts. See, e.g., D.P.U. 07-64-A at 67. For the purpose of this proceeding, the Department must rely on the best information available to predict the outcomes that are likely to occur over the term of PPA-1. While we cannot discount the possibility that the assumptions imbedded in the CRA forecast may be reasonable predictions of future wholesale market conditions and prices,¹⁰¹ ESAI's and Levitan's forecasts of natural gas prices are based on publicly-traded contracts, which represent a more reasonable representation of future market conditions than CRA's doubling of EIA projections. Accordingly, we find that the so-called "base case" forecasts produced by ESAI and Levitan represent the most likely energy and capacity price forecasts.

¹⁰¹ Factors that could increase future electricity prices include but are not limited to: (1) restrictions on the continued development of shale gas resources in the Marcellus formation and elsewhere; (2) the development of federal legislation that puts a price on CO₂; and (3) enactment of the Environmental Protection Agency's ("EPA") proposed suite of regulations for the electric power sector.

With respect to the best method for calculating the energy market value that will be obtained under PPA-1, we expect that ESAI's and Levitan's monthly approach will account for the output of the Cape Wind facility and actual prices in effect during the relevant time periods more accurately than would the 7x24 approach. The monthly approach aggregates hourly prices to develop the facility's monthly peak and off-peak values. We find that this approach is likely to produce more precise estimates of market value than the 7x24 approach, which is based on annual price aggregation combined with annual facility output (Tr. 5, at 1052-1054). Accordingly, the Department will use the monthly approach to determine the energy market value of PPA-1.

In addition, we have considered Alliance's assertion that if the Cape Wind facility produces more of its electricity output during times of low (off peak) energy market prices, the electricity (and thus the energy component of PPA-1) will have less market value (Alliance Brief at 42). The monthly approach to determining the energy market value of PPA-1 addresses this issue directly because it calculates energy market value separately for off-peak and on-peak periods (Exh. DPU-NG-9-1). The monthly approach calculates the market value of the facility's output during off peak hours in each month as the product of the facility's projected output during those hours and the projected average off peak market energy price for the month. The monthly approach calculates the market value of the facility's output during on peak hours in each month in a similar manner (Exh. DPU-NG-9-1). Therefore, our adoption of the monthly approach to determine the projected energy market value of PPA-1 addresses Alliance's concerns.

ii. Renewable Energy Credit Market Value

As described above, ESAI's and CRA's methods of developing REC market value forecasts differ significantly from Levitan's method in terms of their fundamental assumptions regarding the supply and demand for RECs over the term of PPA-1 (Exh. NG-MNM at 25; Tr. 5, at 1055). ESAI's and CRA's forecasts assume a deficit in the future supply of RECs, while Levitan assumes that supply will meet demand and equilibrium will exist in all years of the forecast period (Tr. 5, at 1055-1056; Exhs. NG-MNM at 25; DPU-CW-1-13 (Att. at 12)).

As discussed in Section VII.D.5, below, National Grid and Cape Wind have presented analyses that compare the projected supply and demand of renewable resources over the term of PPA-1. These analyses conclude that, under a variety of scenarios, the demand for renewable resources, which is partly driven by RPS requirements in New England, will significantly exceed the supply of RECs over the term of PPA-1 (Exhs. CW-RBS-9, at 24, 27; NG-SFT at 73-74; NG-SFT-3; RR-DPU-CW-2; Tr. 3, at 631). Based on these analyses, there is a reasonable likelihood that demand for RECs will exceed supply over the term of PPA-1 and that Levitan's assumed equilibrium will not materialize. We conclude that because the Levitan REC price forecast does not consider this gap between renewable supply and demand as likely, it underestimates REC market value. In addition, since ESAI last updated its forecast of REC prices, DOER has issued proposed regulations that, if adopted, are likely to restrict the extent to which existing and new biomass facilities will qualify as Massachusetts Class I RPS resources (Tr. 11, at 2307-2311). Because biomass has been a large portion of the Commonwealth's RPS-qualified resources to date, the likely restricted status of biomass for

Massachusetts RPS purposes exacerbates the projected gap between the supply of and demand for RECs and increases the likelihood that the Levitan forecast underestimates future REC market value.

Based on the above, the Department finds that ESAI's and CRA's forecasts of REC market prices represent a more accurate projection of the value of RECs that National Grid will receive under PPA-1 than the Levitan forecast.

iii. Conclusion

We conclude that the forecast produced by ESAI represents the most reasonable overall projection of the market value associated with the energy, capacity, and RECs from PPA-1 because it: (1) predicts prices by using a reasonable representation of future energy and capacity market conditions; and (2) reasonably projects the value of RECs because of its consideration of likely future conditions of renewable energy supply and demand. Therefore, we will use ESAI's monthly forecast to estimate the market value that National Grid ratepayers will likely receive from PPA-1.

3. Market Price Suppression

a. Introduction

Price suppression refers to the reduction in wholesale energy market clearing prices that results from the addition of low-cost generation resources to those markets.¹⁰² National Grid

¹⁰² In organized wholesale energy markets, clearing prices are set by the bid submitted by the highest cost (i.e., marginal) generator dispatched to meet demand. Because low variable-cost resources typically submit bids that are below that of the marginal generators, these resources tend to displace higher cost generation, thus establishing a lower clearing price for electricity (Exhs. NG-MNM-6, at 6; CLF/CPN-PC at 4-5).

and Cape Wind have offered forecasts of the price suppression effect of the Cape Wind facility on the wholesale energy markets administered by ISO-NE. CLF et al. have offered testimony on and analyses of the Cape Wind facility's price suppression effect on energy, capacity, natural gas prices, and REC markets.

b. Description of Forecasts

i. Energy Price Suppression

National Grid engaged ESAI and Cape Wind engaged CRA to perform a study of the energy price suppression effect of adding the Cape Wind facility to the New England Power Pool (Exhs. NG-MNM-6; NG-MNM-7; CW-RBS-1; CW-RBS-3; CW-RBS-8). CLF et al. also presented expert analysis of and testimony on the energy price suppression effect of the Cape Wind facility (Exh. CLF/CPN-PC at 3-22).

ESAI calculated the price suppression effect of the Cape Wind facility by using the same production cost modeling techniques and assumptions that it used to forecast energy market value (Exhs. NG-MNM-6, at 3, 8, 9; DPU-NG-9-5; NG-MNM-3 (Confidential)). ESAI used the actual hourly wind profile data of the facility for its expected output and simulated hourly energy prices at the Massachusetts Hub to isolate the price suppression effect of the project (Exh. NG-MNM-6, at 3). ESAI presented two resulting scenarios: (1) "ongoing impact," which assumes that price suppression lasts through the term of PPA-1; and (2) "attenuating or diminishing impact," which assumes that price suppression will last through the initial ten years of PPA-1, and then diminish to zero for the next five years (Exh. NG-MNM-6, at 3-5). ESAI states that the attenuating or diminishing impact scenario is

more likely, because it expects that PPA-1 only advances the timing of capacity that would have been built anyway (Exh. NG-MNM-6, at 7). ESAI initially calculated its price suppression estimates based on the projected 468 MW output of the entire facility, but later reduced these results by 50 percent to estimate the benefits associated with the 234 MW of PPA-1 (RR-DPU-NG-4 (rev.)).

Similar to ESAI, CRA calculated the price suppression effect of the Cape Wind facility using: (1) the production cost modeling techniques and assumptions it used to forecast energy market value; and (2) forecasted wind profile data provided by Cape Wind that includes for each month of the year, an average value for each hour of the day (Exh. CW-RBS-3, at 2).¹⁰³ CRA forecasts that the price suppression impact of the facility will not diminish over the course of the contract (Exh. NG-MNM-7).

Table 4, below, summarizes the overall estimates developed by ESAI and CRA of the value of the price suppression effect over the 15-year term of PPA-1.

¹⁰³ CRA also ran the model using a high-fuel case scenario. It incorporated the higher fuel price sensitivity case from ISO-NE's 2030 Power System Study, which assumed future natural gas prices are twice the Energy Information Administration's 2009 Annual Energy Outlook ("EIA AEO2009") (Exhs. CW-RBS-8; DPU-CW-4-2).

Table 4: ESAI and CRA Estimates of Benefits from Price Suppression Effect (in millions of dollars)¹⁰⁴

Forecasted Load ¹⁰⁵	Nominal \$			NPV @ 7% Discount Rate		
	ESAI		CRA	ESAI		CRA
	Ongoing	Attenuating		Ongoing	Attenuating	
MECo & Nantucket	\$255	\$192	\$240	\$151	\$124	\$139
Massachusetts	\$659	\$498	\$621	\$390	\$321	\$359
New England	\$1,415	\$1,070	\$1,333	\$837	\$691	\$771

While it was not prepared expressly for this proceeding, CLF et al. used a proprietary model that evaluates the price suppression effect of energy efficiency resources to estimate the price suppression effect of the Cape Wind facility.¹⁰⁶ CLF et al. suggest that this energy efficiency model is relevant here because adding a MW of infra-marginal generation (through PPA-1) has the same price suppression effect as reducing load by one MW (Exh. CLF/CPN-PC at 7). The model employs a regression of historical day-ahead hourly

¹⁰⁴ Source: RR-DPU-NG-4 (rev.).

¹⁰⁵ The load forecasts for Massachusetts and New England are from the April 5, 2010 ISO-NE CELT Forecasting Details Report, which assumes one percent growth per year after 2019 (RR-DPU-NG-4 (rev.)).

¹⁰⁶ CLF et al. presented a model that is included in “Regional Electric-Energy-Supply Prices Avoided by Energy-Efficiency and Demand-Response Programs,” Chapter 6 of “Avoided Energy Supply Costs in New England: 2009 Report” (2009; Westfield, Mass.: Avoided-Energy-Supply-Component Study Group) (see Exh. CLF/CPN-PC at 7 & n.2). The Department reviewed the results of this model in conjunction with the three-year energy efficiency plans submitted by the electric program administrators. See, e.g., D.P.U. 09-116 through D.P.U. 09-120.

zonal prices between December 2005 and April 2009 against: (1) day-ahead load in the SEMA load zone; and (2) day-ahead load in each of the remaining ISO-NE load zones (Exh. CLF/CPN-PC at 7). Using the results of the regression model, CLF et al. project that, in 2014, the output of the Cape Wind facility will result in a price suppression effect for the wholesale electricity market that is roughly 30 percent lower than the price suppression effect estimated by National Grid (Exh. CLF/CPN-PC, at 11).

ii. Capacity Price Suppression

CLF et al. suggest that the Cape Wind facility may help prevent the capacity market price from rising above its floor of \$2.95 per kW-month, which is administratively set by ISO-NE (Exh. CLF/CPN-PC at 18-19). CLF et al. predict that the capacity market price could rise above its floor if enough capacity resources (*i.e.*, approximately 4,000 MW) are retired, mothballed, sold out of the region, or increase in price (Exh. CLF/CPN-PC at 18-19). CLF et al. state that, when there is no longer a surplus of capacity in the market at the floor price, or when the floor price is removed, the Cape Wind facility would reduce the capacity price by about \$7 per kW-year (Exh. CLF/CPN-PC at 19). According to CLF et al., the Cape Wind facility would offer an annual capacity price suppression benefit of \$80 million to Massachusetts customers and \$225 million to New England customers (Exh. CLF/CPN-PC at 19).

iii. Natural Gas Price Suppression

CLF et al. expect that the Cape Wind facility will suppress the price of natural gas, thus providing additional benefits to customers (Exh. CLF/CPN-PC at 20-22). CLF et al. note that during 60 percent of the hours in 2009, natural gas generation set the marginal clearing

price of electricity (Exh. CLF/CPN-PC at 20). According to CLF et al., because some of this marginal generation will be displaced by the Cape Wind facility, demand for natural gas and transportation service will decrease, thereby lowering prices (Exh. CLF/CPN-PC at 21). According to CLF et al., the Cape Wind facility would provide Massachusetts customers annual natural gas price suppression benefits of \$3 million in direct, end-use natural gas purchases and \$5 million from reduced costs of natural gas-fired electric generation (Exh. CLF/CPN-PC at 22).

iv. REC Price Suppression

CLF et al. suggest that the Cape Wind facility will result in a price suppression effect on REC markets (Exh. CLF/CPN-PC at 19-20). According to CLF et al., an increase in the supply of RECs in the market will put downward pressure on the price (Exh. CLF/CPN-PC at 20). CLF et al. predict that even if the supply of renewable energy were insufficient to meet demand, the Cape Wind facility could change the marginal ACP in the region which, in turn, sets the regional market price for Class-1 RECs (Exh. CLF/CPN-PC at 20).¹⁰⁷ CLF et al. state that the facility could make the difference between Class-1 REC prices being set by the Massachusetts ACP or the Connecticut ACP, the delta being the price suppression effect (Exh. CLF/CPN-PC at 20). CLF et al. also note that if biomass-fueled generation becomes ineligible to meet the Massachusetts Class-1 RPS, the supply of renewables will become

¹⁰⁷ For example, CLF et al. argue that if the RPS requirement of a state that has a high ACP price, such as Massachusetts, is met as a result of Cape Wind, the marginal clearing price for Class-1 RECs would then be established by the ACP price in a state with the next highest ACP (Exh. CLF/CPN-PC at 20).

further constrained and the price suppression impact of the Cape Wind facility will become more important (Exh. CLF/CPN-PC at 20).

c. Positions of the Parties

i. National Grid

National Grid asserts that the Cape Wind facility will undeniably have a price suppression effect, which will be a benefit for customers (National Grid Brief at 37-38). National Grid argues that introducing a low-cost generator like the Cape Wind facility into the region will reduce energy market clearing prices in New England (National Grid Brief at 37-38). According to the Company, in analyzing the benefits of PPA-1, the Department should consider the resulting lower energy prices for consumers (National Grid Brief at 38).

ii. Cape Wind

Cape Wind asserts that PPA-1 will result in significant reductions in wholesale energy prices throughout Massachusetts and New England (Cape Wind Brief at 31-32). Cape Wind contends that the price suppression effect of the facility across all of New England will result in a cumulative cost reduction of \$4.6 billion (nominal) over the facility's expected life of 25 years (Cape Wind Brief at 32, citing Exhs. CW-DJD-1, at 28; CW-RBS-1, at 27; CW-RBS-3).¹⁰⁸ Cape Wind argues that, even if National Grid's customers pay above-market costs for approximately three percent of their energy supply under PPA-1, they will pay less

¹⁰⁸ This assumes the impact of a 468 MW facility for all of New England. However, using the results of CRA's price suppression model, the benefit to National Grid's customers over the 15 year contract term assuming only 50 percent of the project's output (consistent with PPA-1) would equal \$240 million in nominal terms and \$139 million in NPV terms (see RR-DPU-NG-4 (rev.)).

for the remaining 97 percent of their energy supply (Cape Wind Brief at 32, citing Exh. CW-RBS-9, at 53). In response to Alliance's assertion that Cape Wind did not compare the price suppression effect of the facility to that of alternative resources, Cape Wind states that the facility's benefits will exceed those of alternatives because it will generate electricity 92 percent of the time due to its location in Nantucket Sound, which has rich wind resources (Cape Wind Reply Brief at 15). As a result, Cape Wind claims that the facility will reduce market prices in virtually all hours of the year (Cape Wind Reply Brief at 15).

iii. Attorney General

According to the Attorney General, the Department should discount any alleged price suppression effect as a benefit (Attorney General Brief at 34). The Attorney General asserts that Cape Wind overstates the price suppression effect as a benefit because its analysis fails to account for possible countervailing effects such as increases in long-term supply costs due to energy market price distortion (Attorney General Brief at 34). In addition, the Attorney General claims that Cape Wind's analysis assumed a permanent price suppression effect and did not take into account any factors that would diminish it, such as the retirement of fossil fuel generation resources or the Commonwealth's achievement of RPS targets (Attorney General Brief at 34, citing Tr. 3, at 622-630). The Attorney General agrees with Alliance that price suppression effects are artificial and only exist in the short-term (Attorney General Brief at 34).

iv. Alliance to Protect Nantucket Sound

According to Alliance, testimony by Cape Wind's own witness in a recent FERC proceeding demonstrates that the price suppression effect is artificial, distorts the market, is economically inefficient, and can adversely affect system reliability (Alliance Brief at 45-46 & n.31, citing testimony by R. Stoddard in New England Power Generators Association, Inc., v. ISO New England, Inc. et al., FERC Docket Nos. ER787-000, EL10-050-000, and EL10-57-000 (consolidated) (2010)). Alliance claims that, as Cape Wind itself acknowledges, the price suppression effect should not be considered a benefit in this case (Alliance Brief at 45, citing Tr. 1, at 238). Alliance argues that PPA-1 is merely a subsidy (Exh. APNS-JAL at 125-130; Tr. 6, 1346-1348). It claims that the subsidy will result in transfer payments from generators to customers, which (1) will not reduce societal costs and, therefore, according to economic theory should not be considered as a cost or a benefit; and (2) will be outweighed by long-term costs manifested in markets for energy, capacity, and ancillary services (Exh. APNS-JAL at 125-130; Tr. 6, 1346-1349, 1351-1353).

Furthermore, Alliance argues that price suppression is counted twice in the analyses conducted by National Grid and Cape Wind; first in the estimate of above-market costs and second in the estimate of price suppression effects (Exh. APNS-JAL-R at 25-27; Tr. 6, at 1263). Alliance also asserts that, as National Grid acknowledges, other renewable energy resources would generally provide the same price suppression effect as the Cape Wind facility and there is no record evidence comparing the price suppression effect of the Cape Wind facility to that of a less expensive alternative (Alliance Brief at 46-47).

v. CLF et al.

CLF et al. recommend that the Department consider the price suppression effect of the Cape Wind facility as a benefit to ratepayers (CLF et al. Brief at 21-26). CLF et al. claim that, like the demand resource induced price effect (“DRIPE”) that is taken into account in the context of energy efficiency, it is appropriate to reduce the cost of PPA-1 by the price suppression effect (CLF et al. Brief at 21-22, 24). CLF et al. contend that, consistent with its practice regarding energy efficiency resources, the Department should give full credit to the price suppression effect experienced within the borders of Massachusetts and throughout New England as benefits of a Section 83 long-term contract (CLF et al. Brief at 21-22, 24).

According to CLF et al., three parties to this proceeding have sponsored price suppression analyses that have suggested that the benefits to New England of the Cape Wind facility would far outweigh the cost of PPA-1 (CLF et al. Brief at 22). CLF et al. assert that the price suppression benefit of the 468 MW facility to Massachusetts’ electric and natural gas customers would total approximately \$150 million annually (in nominal terms), at least during early years of operation (CLF et al. Brief at 23, citing Exh. CLF/CPN-PC at 3, 14).¹⁰⁹ CLF et al. note that over the duration of the 15-year contract, these price suppression benefits could be two or three times greater than the contract’s above-market costs (CLF et al. Brief at 23).

CLF et al. assert that the Cape Wind facility will also have a price suppression effect on the

¹⁰⁹ This calculation includes the price suppression benefits from energy, capacity, and natural gas (RR-DPU-CLF/CPN-1). CLF et al. indicate that approximately \$22 million of these annual benefits would be derived from energy market suppression in National Grid’s service territory (or approximately half that amount assuming the impact of a 234 MW facility) (RR-DPU-CLF/CPN-1).

capacity market if prices in that market eventually increase above the current \$2.95 per kW-month floor (CLF et al. Brief at 26). CLF et al. argue that although ratepayers' capacity payments are smaller than their energy payments, this does not necessarily mean that the price suppression effect will be smaller on capacity prices than on energy prices (CLF et al. Brief at 26, citing Tr. 8, at 1707). CLF et al. state that if the price suppression effect of the Cape Wind facility lowers capacity prices by \$0.60 per kW-month, or \$7 per kW-year, the benefits to Massachusetts ratepayers are likely to total about \$80 million per year (CLF et al. Brief at 26, citing Exh. CLF/CPN-PC at 19).

According to CLF et al., the Attorney General's recommendation to discount the benefits of the price suppression effect is inappropriate because it ignores the testimony of expert witnesses for CLF et al. and National Grid, who have claimed that it will be both material and beneficial (CLF et al. Reply Brief at 17). CLF et al. argue that Alliance has presented no credible challenge to the price suppression effect because Alliance's witness did not refute its existence, arguing instead that it was a transfer payment and not an economic benefit (CLF et al. Reply Brief at 18-19).

vi. Department of Energy Resources

DOER recommends that the Department consider the price suppression effect of PPA-1 on the region's energy prices as a benefit to ratepayers (DOER Brief at 31-34). DOER argues that it would be illogical and inconsistent with Section 83 for the Department to consider the full costs of PPA-1 without considering the full benefits (DOER Brief at 31-33). DOER asserts that the experts in this proceeding unanimously agree that the Cape Wind facility will reduce energy prices and save consumers hundreds of millions of dollars (DOER Brief

at 31-33). DOER also notes that the results of the price suppression studies are remarkably similar, considering that they use different methods (DOER Brief at 31-33). DOER asserts that the price suppression effect of PPA-1 based on an output of 234 MW would result in cumulative nominal benefits to National Grid's ratepayers of between \$192 million and \$255 million (DOER Brief, Att. B & n.54, citing RR-DPU-NG-4 (rev.)).

DOER asserts that it is appropriate to assume that the price suppression effect will last throughout the term of PPA-1, because the current capacity surplus in New England is likely to persist well into the future, especially with renewable energy resources entering the market in order to comply with regional RPS requirements (DOER Brief at 33-34). According to DOER, even assuming that there is a diminished price suppression effect over time, ESAI's "attenuating or diminishing impact" analysis shows that there will be considerable benefits to ratepayers (DOER Brief at 34). DOER asserts that the Department should also consider the price suppression effect on out-of-state customers, noting that Section 83 specifically targets system-wide benefits by requiring that resources "contribute to moderating system peak load" (DOER Brief at 12-13).

DOER asserts that Alliance badly mischaracterizes testimony of Cape Wind with respect to price suppression (DOER Reply Brief at 8-9). According to DOER, Cape Wind's witness stated that he did not support the notion of entering into long-term contracts for renewable energy for the sole purpose of suppressing energy prices, which is distinguishable from the instant case, in which a legitimate policy goal coincidentally results in price suppression (DOER Reply Brief at 8-9). DOER asserts that it is clear from Cape Wind's

testimony that the price suppression effect of the Cape Wind facility: (1) is a benefit to consumers; (2) does not lead to inefficient or adverse impacts; and (3) can properly be considered by the Department (DOER Reply Brief at 7-10). DOER asserts that Alliance ignores the distinction between energy and capacity markets, which is that while capacity market prices can drop below competitive levels, energy markets are purely competitive (DOER Reply Brief at 8-9). DOER contends that Alliance takes numerous statements out of context regarding the price suppression effect of other renewable energy resources, and that the Cape Wind facility's size, high capacity factor, and coincidence with peak load would not be matched by alternatives (DOER Reply Brief at 9-10).

d. Analysis and Findings

i. Energy Market Price Suppression

(A) Introduction

There is consensus among the parties to this proceeding that operation of the Cape Wind facility will result, at least in the short term, in a reduction to wholesale energy market clearing prices (Exhs. CW-RBS-1, at 25; APNS-JAL at 126; CLF/CPN-PC at 3-4). The parties differ, however, on whether the effect of price suppression should be included as a benefit in evaluating the cost effectiveness of PPA-1 (see, e.g., Exh. APNS-JAL at 126-127). In addition, the parties who recommend including the benefits of price suppression disagree about the manner in which those benefits should be calculated, including: (1) the level of the facility's output to include in the calculation; (2) the geographic scope of the benefits to be included (i.e., whether the calculation should include those benefits that accrue to National

Grid ratepayers, to all electricity customers in Massachusetts, or to all electricity customers in New England); and (3) the duration of the price suppression effect over the term of the contract.

(B) Including Price Suppression as a Benefit

The Attorney General and Alliance state that the Department should not include the price suppression effect as a benefit in evaluating the cost effectiveness of PPA-1. The Attorney General argues that the price suppression effect is artificial and only occurs over the short-term (Attorney General Brief at 34). Alliance offers five related arguments in support of its position. First, Alliance argues that the price suppression effect comes with a cost; in this case the above-market cost associated with PPA-1 (Exh. APNS-JAL at 126-130). Second, Alliance argues that the price suppression effect does not represent a true benefit in that it does not result in a reduction in societal costs but merely a transfer payment from generators to customers and that, according to economic theory, such transfer payments should not be considered as a cost or a benefit (Exh. APNS-JAL at 125-130; Tr. 6, at 1263). Third, Alliance argues that price suppression can be seen as market manipulation, which will lead to price distortion and economic inefficiency and eventually increase costs to customers (Alliance Brief at 45-47; Exh. APNS-JAL at 125-130; Tr. 6, at 1263). Fourth, Alliance argues that the price suppression is counted twice by National Grid and Cape Wind; first in the estimate of above-market costs and second in the estimate of price suppression effects (Tr. 6, at 1263). Fifth, Alliance argues that the price suppression benefits can be achieved by lower-priced

alternative renewable resources (Alliance Brief at 46-47). We address each of these arguments in turn below.

It is true that PPA-1 will lead to above-market costs that will offset price suppression effects. It is also true that price suppression benefits should not be considered in isolation, and that the above-market costs must be considered as well. This is precisely what the Department does in its cost-effectiveness analysis; we consider all potential costs and benefits of PPA-1, including above-market costs, price suppression, and several other costs and benefits. Therefore, the Department finds that Alliance's first argument does not apply to the analysis being conducted here.

It is also true that the price suppression effect is the result of a transfer of money from generators to electricity customers, as Alliance contends (Exh. APNS-JAL at 126-130). In more precise terms, the operation of Cape Wind will allow customers to keep money that would have otherwise gone to generators in its absence. This transfer of money is not unique to Cape Wind or other renewables; it occurs whenever new competitive (i.e., relatively low-cost) generation resources are added to the wholesale electricity market (Exh. APNS-JAL at 131).¹¹⁰ In fact, this transfer of money from generators to electricity customers is one of the benefits of a competitive wholesale electricity market; as the market becomes more efficient and operates at a lower cost, customers experience benefits by paying less to generators.

¹¹⁰ A transfer of money also occurs whenever energy efficiency resources are added to the wholesale market. The Department accounts for this effect in analyzing the cost-effectiveness of energy efficiency programs. D.P.U. 09-116 through D.P.U. 09-120, at 40, 52 (demand-reduction-induced price effects included in cost-effectiveness analysis of energy efficiency plans); D.P.U. 08-50-A at 38-39.

Whether a transfer of money should be included as a cost or a benefit of a particular resource depends upon the boundaries (i.e., the scope) of the economic analysis being undertaken. If the Department were to apply a societal test to PPA-1 – with all costs and benefits to society included – then the price suppression benefits to electricity customers would be exactly offset by the price suppression costs to generators, and the net societal effect of price suppression would be zero benefits and zero costs. However, as discussed in Section VII.B, above, the Department is not applying a societal cost test in evaluating PPA-1. Instead, we are applying the more limited TRC test, which includes only the costs and benefits that impact the distribution company and its customers.¹¹¹ Under the TRC test, the costs to generators are not accounted for. From this perspective it is appropriate to include the price suppression benefits to customers in evaluating the cost-effectiveness of PPA-1.¹¹²

With regard to the third argument raised by Alliance, the Department is aware that there may be instances when price suppression can result in electricity price distortions and electricity market inefficiencies, which in turn can lead to higher prices that will affect electricity customers. As Cape Wind notes, this problem occurs when a generation resource is introduced to the electricity market for the express purpose of suppressing market prices (Tr. 1, at 233-235). However, there is a material difference between the procurement of long-term contracts for renewable energy, which is supported by state laws and regulations and

¹¹¹ We will also include any societal benefits that we are required to consider under Section 83, e.g., the creation of employment.

¹¹² For these same reasons the Department includes the benefits of price suppression in evaluating the cost-effectiveness of energy efficiency resources.

legitimate policy goals intended to facilitate investment in renewable energy, and initiatives that are designed specifically to reduce market prices, thereby forcing existing facilities out of the market (Tr. 1, at 233-235). The price suppression effect of long-term contracts for renewable energy is an unintended byproduct of a public policy goal mandated by state law. It is not the result of an intent to manipulate or undermine the electricity markets. Consequently, the Department finds that it is appropriate to account for this benefit along with all the other benefits that will result from long-term contracts for renewables.

Fourth, the Department finds that Alliance's argument that the price suppression benefit of PPA-1 has been double-counted to be misplaced. While it is true that the forecast of electricity prices used to estimate the above-market costs accounts for the fact that electricity prices will be lower with the operation of Cape Wind, this does not represent a double-counting of the price suppression effects. National Grid and Cape Wind's forecasts of electricity prices appropriately assume that the Cape Wind facility will be operational; this is necessary to properly calculate electricity prices that will exist in the event that PPA-1 is approved. The price suppression estimate is an additional, separate calculation that captures an additional, separate effect. Therefore, it is appropriate to include a separate calculation of price suppression effects. In addition, including Cape Wind's generation in the forecasts of electricity prices has the effect of lowering future electricity prices (relative to not including it), and thereby decreasing forecasted market revenue from the contract. Therefore, if there were any double-counting of price suppression effects, as alleged by Alliance, it would not overstate the estimated benefits of price suppression; it would instead understate the benefits of

price suppression. Furthermore, the above-market costs of PPA-1 apply to only 3.5 percent of the electricity consumed by National Grid's customers, while the price suppression effect is relevant to the electricity consumed by National Grid's customers, as well as to the electricity consumed by other customers in Massachusetts and New England. See D.P.U. 08-50-A at 38. Not only do the two calculations serve two separate purposes, they apply to two different populations of electricity customers.

The Department concurs with Alliance's view that other renewable facilities will also have price suppression effects. The magnitude of the price suppression effect from any one renewable resource will vary depending upon the amount and the timing of the generation, but the general price suppression effect will exist with all renewable facilities. However, this is not a reason to ignore or exclude price suppression effects from our consideration of cost-effectiveness. Instead, these effects should be considered a benefit along with all of the other benefits offered by a contract for renewable energy. To the extent that any one renewable facility offers more or fewer price suppression benefits than others – due to the amount and timing of its generation – this factor should be a part of the Department's considerations; both when evaluating cost-effectiveness and when comparing a particular renewables contract with other Section 83-eligible renewable facilities.

Based on the above, the Department finds it appropriate to include the benefits associated with Cape Wind's price suppression effect in our evaluation of the cost effectiveness of PPA-1.

(C) Level of Cape Wind Output

As discussed above, the initial forecasts provided by National Grid and Cape Wind of the price suppression effect were based on 468 MW, which is the maximum nameplate capacity of the Cape Wind facility (Exhs. DPU-NG-9-7; DPU-CW-5-1). ESAI later submitted a second forecast based on 234 MW, which is the maximum amount of power that National Grid will purchase under PPA-1 (RR-DPU-NG-4).

National Grid's customers, along with electricity customers throughout Massachusetts and New England, will benefit from the price suppression effect associated with Cape Wind's full output, regardless of who purchases the output. We find, however, that it would be inappropriate to include as a benefit of PPA-1 the price suppression effect associated with any output of Cape Wind that National Grid is not purchasing. Therefore, the Department will only consider the price suppression effect associated with the Company's contract for 234 MW of the Cape Wind facility's output, as shown in RR-DPU-NG-4.

(D) Geographic Scope of Price Suppression Benefits

Because of the integrated nature of the electricity system in New England, the price suppression effect of the Cape Wind facility will provide benefits not only to National Grid's ratepayers, but also to electricity consumers throughout the state and the New England region. Thus, in terms of geographic scope, the price suppression effects of the facility can be considered broadly on a region-wide basis, less broadly on a statewide basis, or narrowly on a National Grid service territory-wide basis.

The geographic scope that the Department applies to price suppression effects depends on the context in which these effects are being considered. The price suppression effect has implications in three different contexts: (1) in the cost-effectiveness analysis, as a benefit to customers; (2) in the cost-effectiveness analysis, as creating employment benefits (see Section VII.D.9); and (3) in the public interest review, as it affects bill impacts (see Section VIII.E). With regard to cost-effectiveness and customer benefits, the Department will focus its analysis on the benefits to National Grid's customers. Therefore, in this context we are primarily interested in the price suppression effects on National Grid customers.¹¹³ With regard to the employment benefits, the Department is primarily interested in the employment effects in the New England region; therefore we are primarily interested in the price suppression effects on employment throughout New England. With regard to the bill impact analysis, the Department will focus on the bill impacts on National Grid customers; therefore, we are primarily interested in how price suppression affects the bills of National Grid customers.

¹¹³ In our review of energy efficiency cost-effectiveness, the Department considers the statewide benefits of price suppression. D.P.U. 08-50-A at 38. The energy efficiency programs are materially different from long-term renewables contracts in that they are specifically required to be planned and implemented on a statewide basis. See G.L. c. 25, § 21(b)(1). Also, in the case of energy efficiency, all program administrators are required to implement all cost-effective energy efficiency resources pursuant to G.L. c. 25, § 21; whereas in the case of long-term renewables contracts distribution companies are only required to solicit proposals.

(E) Duration of Energy Price Suppression Effect

ESAI's forecasts of the price suppression effect of PPA-1 included two scenarios — one in which the effect lasts throughout the 15-year term of PPA-1, and another in which the effect lasts for ten years, and then rapidly attenuates (Exhs. NG-MNM-6, at 4-7; NG-MNM-7).

CLF et al. recommend that the Department assume that the price suppression effect lasts until 2020 and then attenuates, arguing that supply resources will adapt to lower energy market prices by delaying construction of new generation units, accelerating retirements, or mothballing existing units (Exh. CLF/CPN-PC at 14-19). CLF et al. explain that this adaptation by suppliers will ultimately increase energy prices and offset the direct price suppression effects of the Cape Wind facility (Exh. CLF/CPN-PC at 14). In contrast, the CRA study prepared for Cape Wind estimates that the price suppression effect will be a lasting benefit for the foreseeable future (Exh. CW-RBS-3, at 3).

The Department agrees with CLF et al. that the price suppression effect can be expected to diminish over time as a result of new resources eventually entering the market in response to increased load, reduced supply, or both (Exh. CLF/CPN-PC at 16-17; Tr. 8, at 1694-1699).¹¹⁴ Exactly when the diminution will occur is difficult to forecast. It is likely that in the context of the current New England electricity market, which has excess capacity and is expected to continue to have excess capacity for some time, the price suppression effect

¹¹⁴ When the Department has previously evaluated the price suppression effect of energy efficiency resources, it has accepted estimates based on the assumption that these benefits eventually dissipate. See, e.g., D.P.U. 08-50-A at 35; D.P.U. 09-116 through D.P.U. 09-120, at 40, 52; Rick Hornby et al., Avoiding Energy Supply Costs in New England: 2009 Report at 6-45 (2009).

could last well into the future, including most of the period of the 15-year PPA-1 contract (Exh. CLF/CPN-PC at 17; Tr. 8, at 1694-1699). In light of these factors, the Department will use the results of ESAI's "attenuating or diminishing impact" case as a baseline to evaluate the price suppression effect of PPA-1. As indicated in Table 4, the results from this case indicate that the price suppression effect on National Grid customers from 234 MW of PPA-1 will be \$124 million, in present value dollars.

(F) Dilution of Energy Price Suppression Effect

The price suppression effect originates in the real-time energy market, where an infra-marginal resource shifts the supply stack by displacing one or more resources that would otherwise have set the marginal clearing price. The benefits of price suppression are realized only to the extent that the real-time price suppression effect is transferred to the day-ahead and the bilateral markets, the markets in which the vast majority of load in New England is purchased (Exh. CLF/CPN-PC at 7, 12). Because ESAI and CLF et al. present models that simulate only a real-time market, their results assume that the price suppression effect in the real-time market will translate fully to energy prices in the day-ahead and bilateral markets (Tr. 5, at 1129-1130; Exhs. NG-MNM-6, at 7; CW-RBS-3, at 2; NG-MNM at 27). For the reasons discussed below, we conclude that this assumption may tend to overstate the benefits that the Company's ratepayers will realize from the price suppression effects of the Cape Wind facility.

First, each model presumes that the benefits of the price suppression effect will be fully realized during the initial year of Cape Wind's operation. Both Cape Wind and CLF et al.

agree that this assumption may overstate the benefits of the price suppression effect during the early years of PPA-1 because electricity suppliers may not fully incorporate the price suppression effect of Cape Wind into their bilateral contracts during those years (Tr. 3, at 621; Tr. 8, at 1723).¹¹⁵ Thus, the Department concludes that the models presented by Cape Wind and CLF et al. may overstate the benefit of the price suppression effect during the early years of the contract.

Second, the price suppression effect of intermittent resources like the Cape Wind facility in the real-time market may not be fully transferred to the day-ahead market. In the day-ahead market, the price suppression effect is influenced by market participants such as load serving entities and virtual bidders' being able to forecast the facility's output. Because the facility's output is variable and, therefore, difficult to forecast with precision, it is conceivable that these market participants will underestimate the facility's output. To the extent that the price suppression effect in the day-ahead market is thereby less significant than the actual price suppression in the real-time market, its benefits would be somewhat less than those presented above.

As a result, we conclude that both models may overstate the price suppression effect. Therefore, we find it appropriate to include in our analysis of the cost-effectiveness of PPA-1, a likely range of estimates of the price suppression effect. On the high end of the range, we will use ESAI's "attenuating or diminishing impact" case, which assumes that ratepayers will

¹¹⁵ Cape Wind expects that this may occur during 2013, the expected first year of PPA-1, while CLF et al. refer to both as 2013 and 2014 (Tr. 3, at 621; Tr. 8, at 1723).

realize most of the price suppression effect in the real-time energy market, thereby resulting in a high-end estimate of \$124 million. While not included in Table 4, above, CLF et al. assert that their estimate was 30 percent lower than ESAI's. Accordingly, we will use a value equal to 70 percent of the ESAI value as the low end of the range, thereby resulting in a low-end estimate of \$87 million (Exhs. CLF/CPN-PC at 11; DPU-CLF/CPN-1-3; RR-DPU-CLF/CPN-1). In conclusion, the Department expects that price suppression effects on National Grid customers from 234 MW of PPA-1 will be in the range of \$87 to \$124 million, in present value dollars (see Section VII.E, below).

ii. Capacity Market Price Suppression Effects

CLF et al. are the sole advocates for including the capacity market price suppression effect as a benefit of PPA-1 (CLF et al. Brief at 26). CLF et al. acknowledge, however, that during the next three capacity market auctions (2013-2014 through 2015-2016), the Cape Wind facility will only suppress capacity prices if approximately 4,000 MW of existing capacity resources are de-listed, sold out of the region, or are repriced above the market floor (Exh. CLF/CPN-PC at 18-19). These are unlikely contingencies but, even if they occurred, any likelihood of suppressed capacity prices would be reduced further by the possibility of significant rule changes in the capacity market (Exhs. CLF/CPN-PC at 18; DPU-CLF/CPN-PC-1-7). For example, the Alternative Price Rule recently proposed by ISO-NE would explicitly negate the effect of the Cape Wind facility on the market clearing price for capacity (Tr. 3, at 616-617; Tr. 8, at 1708-1709; Exhs. CLF/CPN-PC at 18;

DPU-CLF/CPN-PC-1-7). For these reasons, we do not include estimates of capacity market price suppression in our analysis of the cost-effectiveness of PPA-1.

iii. Natural Gas and REC Price Suppression Effects

CLF et al. claim that if the Cape Wind facility displaces any natural gas generation facilities at the margin, it could also exert downward pressure on natural gas prices (CLF et al. Brief at 22). There are inherent differences, however, between the natural gas and electric power markets, which make this relationship less than clear-cut. For example, natural gas can be stored, trucked, sent by pipeline over long distances, and even shipped in its liquefied form; and its price is derived primarily in national markets, like Henry Hub. Therefore, any price suppression effect would probably result only from regional transportation constraints.

CLF et al. have derived their natural gas suppression estimates from the baseline results of a 2005 New York State Energy Research and Development Authority (“NYSERDA”) study, without providing evidence that the results of the New York study are applicable to Massachusetts, or are still relevant after five years. Given the complexities and nuances involved in calculating the price suppression effects on natural gas markets, we find that it would be inappropriate to give much weight to these benefits without more extensive analysis and input from other stakeholders. Therefore, we do not include estimates of natural gas price suppression in our analysis of the cost-effectiveness of PPA-1.

None of the parties dispute that generation from Cape Wind will have the effect of reducing REC prices. Whenever a new source of RPS-eligible generation supply is introduced into a market it should have the effect of lowering REC prices. However, there is little

evidence on this record quantifying the extent to which REC prices would be suppressed by Cape Wind. In addition, the renewable energy gap analysis presented by National Grid suggests that there is likely to be a significant shortfall of renewable resources to meet RPS requirements well into the future (see Section VII.D.5). This shortfall of renewable generation indicates that any REC price suppression from Cape Wind is likely to be modest and short-lived. For both of these reasons, the Department will not include estimates of REC price suppression in our analysis of the cost-effectiveness of PPA-1.

4. Hedge and Price Stability

a. Introduction

The Department must consider the benefits to National Grid ratepayers of PPA-1, based on its ability to provide price certainty and act as a hedge against price increases and volatility. We will analyze such benefits as applied to both the initial 15-year term of the proposed contract as well as the option for a ten-year extension. Cape Wind is the only party who attempted to quantify the hedge benefits of PPA-1 (Exhs. CW-RBS-1, at 19; DPU-CW-1-12).

b. Positions of the Parties

i. National Grid

According to National Grid, like any long-term, fixed-price contract, PPA-1 will provide a hedge against volatile and rising energy prices for at least the initial 15-year term of the contract (National Grid Brief at 37, citing D.P.U. 07-64-A at 66). The Company does not attempt to quantify the hedge value of PPA-1. Instead, the Company states that option market pricing, from which an approximate value can be obtained, is difficult if not impossible to

acquire and lacks the liquidity necessary to provide proper valuation (Tr. 12, at 2406-2408, 2638-2645). The Company claims that the hedge value of PPA-1 is enhanced by a ten-year option to extend the contract because, by the end of the initial 15-year term, the price of PPA-1 could be significantly below market prices (National Grid Brief at 37, citing Exh. NG-MNM (Supp.) at 9-10; Settlement at 5).

ii. Cape Wind

Cape Wind asserts that PPA-1 will provide an important hedge against the volatility and uncertainty of future fossil fuel prices, especially of natural gas (Cape Wind Brief at 36, citing Exhs. CW-DJD-1, at 29; CW-RBS-1, at 16-17; CW-RBS-6; DOER-CW-1-2)). Cape Wind claims that bilateral long-term contracts typically include a mark-up over expected spot market prices to reflect the risk premium that buyers are willing to pay to avoid price volatility (Cape Wind Brief at 36, citing Exh. CW-RBS-1, at 19).¹¹⁶ Cape Wind states that, while future electricity prices are uncertain, price increases and the “roller coaster” pricing of fossil fuels are inevitable, because they are based on national economic conditions as well as national and international markets (Cape Wind Brief at 36-37, citing Exh. CW-DJD-1, at 30). Cape Wind notes that, since the passage of the Electric Restructuring Act in 1997,¹¹⁷ retail basic service prices in Massachusetts have tripled (Cape Wind Brief at 36-37). Cape Wind also argues that

¹¹⁶ Cape Wind notes that the bilateral contract prices of Constellation Energy, a national marketer of electricity and natural gas, represented a mark-up of approximately 8.4 percent over spot market prices during 2007 (Cape Wind Brief at 36-37, citing Exh. CW-RBS-1, at 19-20).

¹¹⁷ St. 1997, c. 164, § 193.

commodity prices tend to follow asymmetric distributions wherein price deviations above market price expectations tend to be higher than price deviations below expectations (Cape Wind Brief at 30, citing Exh. CW-RBS-1, at 12-13).

iii. Attorney General

The Attorney General asserts that PPA-1 will act as a hedge against the significantly volatile gas and oil prices that have been observed over time (Attorney General Brief at 33, citing Exhs. NG-SFT at 21; CW-RBS-1, at 17; CW-DJD-1, at 17). According to the Attorney General, the Department has previously recognized the hedge value of long-term contracts for wind energy (Attorney General Brief at 33, citing D.P.U. 07-64-A at 62, 65). She asserts that the potential value to National Grid ratepayers of the ten-year contract extension clause could be up to \$156.8 million, undiscounted nominal value, or \$24.5 million in NPV terms (Attorney General Brief at 22, citing Exh. AG-JWJC-1, at 28).

iv. Alliance to Protect Nantucket Sound

Alliance argues that National Grid failed to quantify the purported hedge value of PPA-1 because it has no real value (Alliance Reply Brief at 18). Alliance asserts that the hedge value of PPA-1, which it alleges is the most expensive long-term contract in the nation, is negative, and that any theoretical value would be greatly eclipsed by the real hedge value of long-term contracts with lower priced alternatives (Alliance Reply Brief at 18). Alliance further argues that the Department should assign no hedge value to the contract extension clause included in PPA-1 because, according to its calculations, the contract price would need

to be far above projected market prices in order to cover the costs of the facility during the term of the extension (Alliance Reply Brief at 22).

v. CLF et al.

CLF et al. argue that PPA-1 will provide a valuable hedge against volatile fossil fuel prices (CLF et al. Brief at 24). CLF et al. suggest that although these benefits are difficult to quantify, the Department's qualitative review of "hard to measure" energy efficiency programs provides ample precedent for considering these benefits (CLF et al. Brief at 20 & n.7, citing D.P.U. 08-50-A at 25; G.L. c. 25 § 21(b)(2)).

vi. Department of Energy Resources

DOER argues that PPA-1 will provide National Grid ratepayers with a useful hedge against long-term energy price risks and short-term price volatility because spot prices for natural gas have been increasingly volatile (DOER Brief at 29-31). DOER asserts that the risk of energy price forecasts being wrong are asymmetric and will often underestimate the escalation in prices, especially with respect to forecasts of natural gas prices (DOER Brief at 30, citing Exh. DOER-CW-1-1(a); Tr. 3, at 655). DOER claims that basic service prices have increased on average by 15.5 percent a year between July 1998 and June 2008, stating that, if this trend continues, by the end of the contract term the PPA-1 price would be less than one-third of the price for basic service (DOER Brief at 29, citing Exhs. DOER-CW-1-4; DOER-CW-1-6 (corrected); Tr. 3, at 653). DOER contends that while the value of the hedge is difficult to quantify without a comparable product on the market, the Department should consider the hedge value of PPA-1 as having significant monetary value (DOER Brief

at 46-47, citing Exhs. CW-RBS-5; DOER-CW-1-1; DOER-CW-1-6 (corrected)). Also, DOER argues that substantial value would accrue to ratepayers if National Grid exercised its option to extend the contract under the contract extension clause (DOER Reply Brief at 14, citing Exh. DOER-CW-1-6 (corrected)).

c. Analysis and Findings

i. Introduction

We address hedge value here as it relates to price inflation and the price volatility of energy, capacity, and RECs. We will consider future regulatory changes that would increase the cost of electricity, such as the GWSA, in the next section of this Order.

ii. Initial 15-Year Contract Term

Cape Wind suggests that the Department consider the hedge value to be approximately 8.4 percent of the contract cost, based on its analysis of data on Constellation Energy's hedging activities (Cape Wind Brief at 36, citing Exhs. CW-RBS-1, at 19; DPU-CW-1-12; Tr. 3, at 575, 674). We find that this value is overly optimistic for two reasons. First, Constellation Energy's margin of 8.4 percent likely includes more than hedge value alone. It appears to also include the risk premium associated with ancillary services and customer usage volatility, in addition to premiums related to Constellation Energy's branding, marketing, and operating efficiencies. Second, because Constellation Energy operates in competitive commodity markets, it presumably hedges commodities at competitive rates. This implies that its contracts have more hedge value than a contract with significant forecasted above-market

costs, such as PPA-1. Consequently, the Department will not accept Cape Wind's proposed hedge value of 8.4 percent of the contract cost.

The Department has found that fixed-price contracts provide a hedge against fuel price volatility. D.P.U. 07-64-A at 66. The value of such a hedge is based on the possibility that future market prices will exceed the cost of the fixed-price contract. In the case of PPA-1, the likelihood that future market prices will exceed contract prices is relatively small, based on the forecasts provided in this docket (Exh. NG-MNM-2 (Supp.)). Accordingly, the value of PPA-1 as a hedge against future market prices is correspondingly small. Nonetheless, PPA-1 does have some value as a hedge against future GWSA compliance costs, as discussed in Section VII.D.7, below. Therefore, in evaluating the cost-effectiveness of PPA-1, the Department will only assign hedge value to PPA-1 as it relates to its tendency to hedge against future GWSA compliance costs.

iii. Option to Extend Contract

It is difficult to determine the exact value of the option to extend PPA-1 for an additional ten years, due to the uncertainty surrounding the numerous pricing contingencies as well as the uncertainty regarding future market prices for energy, capacity, and RECs. The uncertainty about future prices for energy, capacity, RECs, and other environmental attributes is precisely what gives the option its economic value. The option to extend PPA-1 may also provide customers with potential future benefits from improvements in wind generation technology and information. For example, such improvements could reduce the estimates for operations and maintenance expense as well as the calculated rate of return for a comparable

project, both of which are cost-setting drivers in the option to extend PPA-1.¹¹⁸ Customers can only benefit from this option – there is no downside. While we cannot attribute a specific value to the option to extend, we affirm that it is certainly a meaningful benefit to National Grid’s ratepayers.

5. Compliance with Renewable Energy and Environmental Requirements

a. Introduction

The Department must assess the value and benefits of PPA-1 for National Grid and its ratepayers in meeting renewable energy and environmental goals and requirements. First, we consider the evidence presented by National Grid and Cape Wind regarding supply and demand for renewable energy, and we evaluate the potential benefits of PPA-1 for RPS compliance. Second, we consider the benefits that PPA-1 offers in assisting National Grid and its ratepayers in complying with the GWSA.

b. Assessing Renewable Energy Supply and Demand and RPS Compliance Benefit

i. Description of the RPS

The Massachusetts RPS was adopted in 1997 and amended by the Green Communities Act in 2008. G.L. c. 25, § 11F. The RPS requires retail electricity suppliers to procure a minimum percentage of their electricity sales from qualified renewable energy resources on an annual basis. G.L. c. 25A, § 11F. It defines two categories of qualified renewable energy

¹¹⁸ Using ESAI’s electricity price forecast and depreciation over 20 years, the Attorney General estimates that the option to extend PPA-1 could save ratepayers approximately \$24.5 million (NPV) or much more if Cape Wind’s operations and maintenance costs are lower than estimated (Exh. AG-JWJC-1, at 27-28).

resources, Class I and Class II. 225 C.M.R. §§ 14.00, 15.00 et seq. Pursuant to Section 83, renewable energy resources must qualify as Class I facilities. The Cape Wind facility has already been certified by DOER as a Class I facility (Exh. CW-DJD-3).

The Class I requirement increases at one percent per year such that at the proposed commencement of PPA-1 in 2013 the requirement will be eight percent, and at the proposed end of the contract in 2028, the requirement will be 23 percent. G.L. c. 25A, § 11F; 225 C.M.R. § 14.07. While National Grid must comply with Massachusetts RPS requirements, Massachusetts is part of a regional RPS market that includes most other New England states, which have their own RPS requirements.¹¹⁹ Because RECs generated by eligible renewable energy facilities in New England may be used to meet each New England state's RPS requirement, the effects of supply and demand for renewable energy are influenced by Massachusetts and the combined RPS requirements of the region. In addition, renewable energy resources from adjoining control areas may qualify as Class I or Class II resources for the Massachusetts RPS if they meet certain conditions and, similarly, renewable energy resources in New England may qualify to meet RPS requirements in adjoining control areas, if they meet certain conditions, as outlined below.

ii. Description of Supply and Demand Analyses

(A) National Grid

The Company presented an analysis that includes renewable energy supply and demand projections for the New England region in the years 2010 to 2025 (see Exhs. NG-SFT

¹¹⁹ The exception is Vermont, which does not have an RPS requirement.

at 38-88; NG-SFT-2; NG-SFT-3). The Company factored in transmission constraints and the possibility of imports and exports from other control areas (i.e., NYISO) and Canadian provinces (i.e., Quebec and New Brunswick) (Exh. NG-SFT at 60-68).

First, the Company used New England's several RPS requirements to assume a regional demand for RECs (Exh. NG-SFT at 45-46). Because the amount of renewable energy required to meet these regional RPS requirements will depend upon future energy sales, the Company compared four electricity load growth scenarios: (1) ISO-NE's base case for electricity; (2) ISO-NE's demand-response case for electricity use; (3) a high economic growth case; and (4) a low economic growth case (Exh. NG-SFT at 45-46). Given the possibility of additional supply and demand from adjacent control areas, the Company also analyzed RPS requirements and demand for RECs in New York, as well as renewable energy requirements in Quebec and New Brunswick (Exh. NG-SFT at 47-50).¹²⁰ The Company noted that New England's RPS requirements can be met with renewable energy resources from either: (1) New England itself (except for areas in Maine that are not connected to the ISO-NE grid); or (2) New York, Quebec, and New Brunswick, to the extent that there are firm contracts and firm transmission capacity rights to deliver the power to the ISO-NE grid (Exh. NG-SFT at 60).

¹²⁰ According to the Company, New York's demand for renewable energy exceeds that of New England because of New York's larger total demand for electricity and its higher RPS targets (e.g., 25 percent by 2013, and 30 percent by 2015) (Exh. NG-SFT at 47-48). The Company noted that Quebec and New Brunswick do not have RPS requirements but they have policies that require the construction of renewable energy facilities and purchase of renewable energy (Exh. NG-SFT at 49-50).

To project potential supply of RECs, the Company focused on resources that would qualify for New England's RPS markets and, in particular, would qualify as Massachusetts Class I resources (Exh. NG-SFT at 52-53). The Company's projection of supply included resources that would be available in the relatively near term, and used all announced renewable energy resources in the ISO-NE interconnection queue as a proxy (Exh. NG-SFT at 53).¹²¹ National Grid assumed that the supply curve for New England, New York, Quebec, and New Brunswick, becomes flat beginning in 2015 (Exh. NG-SFT at 55-56). The Company believes that there will be additional renewable energy resources after 2015 but assumed no new supply after 2015 in order to identify the gap that would need to be filled by new renewable energy projects (Exh. NG-SFT at 55). Finally, the Company analyzed the potential for new transmission capacity to deliver renewable energy into and within the ISO-NE control area. The Company noted that tight transmission constraints currently limit the potential for electric distribution companies to import Class I renewable energy resources from New York, Quebec, and New Brunswick to import RPS Class I energy (Exh. NG-SFT at 60-64). The Company also described transmission constraints that exist within New England that could limit the delivery of energy into the ISO-NE control area and, specifically, into the southern New England load centers (Exh. NG-SFT at 60-66). The Company evaluated specific proposed

¹²¹ According to the Company, this proxy included all renewable energy resources currently in the ISO-NE interconnection queue, which overstates the supply in the short term because, historically, only a percentage of projects in the queue have achieved commercial operation (Exh. NG-SFT at 53 n.84, 54-55).

transmission projects, and considered their timelines, projected costs, as well as siting and permitting challenges (Exh. NG-SFT at 63-68, 74).

Finally, to examine the effects of its assumptions for supply, demand, and transmission, the Company modeled numerous scenarios and sensitivities to explore the likelihood that the renewable energy supply will meet increased future demand (Exhs. NG-SFT at 69-73; NG-SFT-2; NG-SFT-3). Based on these scenarios, the Company concludes that, even though there are significant renewable energy resources being developed, Massachusetts and other states will need much more than what is currently announced (Exh. NG-SFT at 73). In addition, while other new projects will likely help meet that need, the Cape Wind facility offers significant advantages in terms of its size, permitting status, location, and transmission access, and the Company expects that it will be essential to help fill the renewable energy resources gap in the region (Exhs. NG-SFT at 74-75; NG-SFT-R at 28-29).

(B) Cape Wind

Cape Wind also offers its projection of the supply of and demand for renewable energy in New England and concludes that the demand is unlikely to be met without offshore wind, including the Cape Wind facility (Exhs. CW-RBS-1, at 20-23; CW-RBS-7).

First, Cape Wind projects the supply of renewable energy without the Cape Wind facility using: (1) a build-out scenario of New England resources based on the ISO-NE interconnection queue; and (2) a broader set of projects that have been identified as under development (Exhs. CW-RBS-1, at 20-23; APNS-CW-1-19(a)). Specifically, Cape Wind assumes its build-out scenario of projects in the existing regional queue and assumes annual

additions of 100 MW of wind resources and 40 MW of solar resources between 2013 and 2020 (Exhs. APNS-CW-1-19(b); CW-RBS-7). Next, to determine the demand for renewable energy, Cape Wind analyzes New England's RPS requirements (Exhs. CW-RBS-1, at 20-23; CW-RBS-7).

Overall, Cape Wind's analysis projects a significant shortfall of supply to meet demand for renewable energy resources (Exh. CW-RBS-7). Also, Cape Wind expects that New England's renewable energy resources will meet only a portion of its demand, ranging from a high of 73 percent of demand in 2013 to a low of 49 percent in 2020 (Exh. CW-RBS-7). To support this analysis, Cape Wind relies on the ISO-NE 2009 Regional System Plan, which projects a significant shortfall of RPS-eligible resources by 2020 (Exh. CW-RBS-1, at 23).

iii. Positions of the Parties

(A) National Grid

National Grid asserts that the Cape Wind facility is needed to narrow a projected gap in the supply of qualified resources to meet state and regional renewable energy goals, including the RPS requirement (Exh. NG-SFT at 69). This gap in available renewable energy resources, when combined with the Company's assumption of no new supply of renewable energy projects after 2015, implies that Massachusetts may be unable to meet its future RPS requirements (National Grid Reply Brief at 5-9). National Grid asserts that its analysis demonstrates that there is a substantial and growing gap between the expected supply of and demand for renewable power, despite the conservative assumptions included in the analysis (National Grid Brief at 25-27).

To support its conclusion that its assumptions about supply and demand are conservative, the Company offers several observations. First, the Company claims that its demand analysis is conservative because it: (1) focuses only on the demand from RPS requirements (i.e., it does not include demand from any voluntary purchases of renewable energy); (2) assumes no demand from municipal utilities because they are not subject to RPS requirements; and (3) includes no assumptions about renewable energy requirements in Canada (National Grid Brief at 27). Second, the Company asserts that its supply analysis is conservative because it assumes that all current renewable energy resources, including biomass, will produce power at current levels for the next 15 years, despite the proposed biomass regulations recently issued by DOER that would further limit the supply of Class I resources. Also, National Grid's supply analysis assumes that every announced project in the ISO-NE and NYISO interconnection queues will enter commercial operation on time and at its maximum nameplate capacity, despite historical experience to the contrary (National Grid Brief at 28-30).¹²² The Company acknowledges that, over time, new projects will replace announced projects that fall out of the queue, but they may also have less favorable attributes than the Cape Wind facility (National Grid Brief at 29-30). Finally, the Company prepared one supply scenario that assumes that 2,000 MW of new transmission capacity from Canada

¹²² The Company notes that at least 60 to 70 percent of projects in the ISO-NE queue never progress to commercial operation (National Grid Brief at 29).

will be completed as early as 2016, and deliver wind generation to New England the same year, which it states is a highly implausible scenario (National Grid Brief at 32).¹²³

National Grid states that, despite its conservative assumptions, it provided 69 supply and demand curves for 2010 through 2025, and all except one show that the gap exists now and will grow every year (National Grid Brief at 31). The Company asserts that the gap is also predicted in other reports that were prepared by or for the Rhode Island Public Utilities Commission, ISO-NE, and Connecticut regulators (National Grid Brief at 32, citing Exhs. NG-MNM-R at 7; NG-MNM-5; CW-RBS-3; Tr. 13, at 2775).

National Grid refutes Alliance's suggestion that the relevant demand for renewable energy is 3.5 percent of National Grid's load, and the relevant supply of renewable energy is all potential renewable projects in New England, New York, and Canada, without regard to transmission availability or commercial viability (National Grid Reply Brief at 5-6). The Company argues that Alliance ignores the fact that New England is an integrated energy system in which National Grid competes with other entities, both within Massachusetts and in the region, for the supply of renewable energy (National Grid Reply Brief at 6). The Company asserts that, as such, the relevant demand for renewable energy is the regional demand, and not 3.5 percent of National Grid's load (National Grid Reply Brief at 5-6).

¹²³ The Company notes that it did not initially assume the addition of new Canadian renewable energy because such power requires a firm transmission path that will require the development of costly infrastructure additions that will likely take years to develop (National Grid Brief at 30-31).

National Grid asserts that Alliance fails to appreciate that the analysis: (1) uses reasonable assumptions about energy efficiency and its effect on demand; (2) uses the projects in the ISO-NE and NYISO interconnection queues as a reasonable and conservative proxy for the supply of new renewable power; and (3) incorporates future solar resources (while noting that even if the Massachusetts target for solar was reached by 2017, it would produce less than 20 percent of the energy and RECs of the Cape Wind facility and could not alter the fundamental gap in supply) (National Grid Reply Brief at 7-8). The Company claims that, as its analysis demonstrates, even after including a hypothetical 2,000 MW transmission expansion from Canada, there would still be a substantial gap between supply and demand (National Grid Reply Brief at 6-8).

National Grid asserts that, by enacting Section 83, the Legislature recognized the need for electric utilities in Massachusetts to: (1) enter into long-term contracts to facilitate the financing of renewable energy resources; and (2) meet the RPS requirements through renewable energy supply and not merely by making ACP payments (National Grid Brief at 2-4, 24). National Grid argues that the Cape Wind facility presents an unparalleled opportunity for Massachusetts to minimize the renewable energy gap, and that rejecting PPA-1 will almost certainly ensure that there would be no meaningful offshore wind power in the country in the foreseeable future, which will result in a shortage of renewable energy (National Grid Brief at 33; National Grid Reply Brief at 10).

(B) Cape Wind

According to Cape Wind, its analysis and National Grid's analysis have established that, under a robust set of assumptions, a substantial and growing gap exists between the supply of and demand for renewable energy in Massachusetts and the region, now and in the long-term (Cape Wind Brief at 20-21). First, Cape Wind asserts that National Grid's analysis is conservative because most projects included in its analysis are not likely to be commercially viable (Cape Wind Brief at 21-22).¹²⁴ Even though National Grid assumed a hypothetical transmission line carrying 2,000 MW of land-based wind from Canada, which it calls "highly optimistic," Cape Wind argues that there will be a large and sustained gap between supply and demand starting around 2014 and growing through 2025 (Cape Wind Brief at 21-22).

In addition, Cape Wind claims that it presented its own reasonable "build-out" scenario based on an assessment of technical potential, site limitations, permitting requirements, and development and construction time for new renewable energy facilities (Cape Wind Brief at 22-23). Cape Wind asserts that its analysis demonstrates that the growing demand for renewable energy in New England will not be satisfied without the Cape Wind facility (Cape Wind Brief at 22-23). Cape Wind argues that, to demonstrate the robustness of its analysis, it updated its assumptions to remove offshore wind, include biomass facilities outside of Massachusetts, include imports of wind from Maine, and aggressively increase solar and land-based wind supply (Cape Wind Brief at 23). Even under this highly optimistic set of

¹²⁴ Cape Wind observes that only a small percentage of proposed generators (32 percent overall, and 30 percent for wind resources) proceed to commercial operation (Cape Wind Brief at 21-22).

assumptions, Cape Wind contends that New England will reach only 52 percent of its RPS targets by 2020 (Cape Wind Brief at 22-23). Cape Wind concludes that, based on the limited availability of renewable energy resources in New England, offshore wind is an essential component for meeting all RPS requirements (Cape Wind Brief at 23-24).

As a result, Cape Wind asserts that both its own and National Grid's analyses are demonstrably conservative because they do not take into account: (1) historic attrition rates for renewable energy projects in the ISO-NE queue; (2) any special RPS requirements for resource types; (3) voluntary renewable power purchases; (4) increasingly stringent state or federal requirements; (5) higher load growth from regional economic recovery; and (6) the tenuous future of biomass as a renewable energy resource (Cape Wind Brief at 23-24).

Cape Wind argues that Alliance's criticisms of Cape Wind's and National Grid's analyses are without merit and unsupported because Alliance did not conduct its own analysis of supply of and demand for renewable energy resources (Cape Wind Brief at 25-27). According to Cape Wind, Alliance's proposal to import large amounts of renewable energy resources from Maine and Canada is unsupportable because it would necessitate uncertain transmission expansions that will encounter: (1) lengthy timelines; (2) significant costs; and (3) challenging permit processes (Cape Wind Brief at 25-27). Cape Wind argues that Alliance relies solely on the availability of the Northern Pass project for the transmission of hydroelectric power from Quebec, which is not eligible as a Class I RPS resource in Massachusetts and, even if it were, would be insufficient to fill the substantial renewable energy gap (Cape Wind Brief at 25-27). Finally, Cape Wind refutes Alliance's arguments that

the demand component of National Grid's analysis should: (1) focus only on the RECs that National Grid needs; and (2) account for the effects of increased energy efficiency (Cape Wind Reply Brief at 9). First, Cape Wind states that Alliance ignores the fact that other Massachusetts electric distribution companies and utilities in other New England states will compete for the same limited supply of renewable energy (Cape Wind Reply Brief at 9-10). Second, Cape Wind asserts that National Grid's demand analysis explicitly includes a low economic growth scenario, which is similar to a high energy efficiency case (Cape Wind Reply Brief at 9-10).

(C) Attorney General

According to the Attorney General, the large size of the Cape Wind facility will help ensure that Massachusetts can meet its future RPS requirements and goals (Attorney General Brief at 33). The Attorney General asserts that the Department should be cautious about adopting the Company's gap analysis for use in future proceedings, because the extension of this logic is that any project that would help fill the gap between supply and demand would be considered cost-effective (Attorney General Brief at 33).

(D) Alliance to Protect Nantucket Sound

Alliance asserts that National Grid has failed to demonstrate that it needs PPA-1 to meet current RPS requirements (Alliance Brief at 8). Alliance argues that National Grid's analysis is fundamentally flawed because it fails to consider whether there are sufficient Class I renewable resources available to meet 3.5 percent of National Grid's load that are: (1) already operational; (2) in the interconnection queue; and (3) just as far along in the permitting process

as the Cape Wind facility (Alliance Brief at 23-26). Alliance asserts that National Grid's analysis overstates the demand for RECs because it fails to account for the fact that Massachusetts is on track to meet 30 percent of its anticipated energy needs by 2020 through energy efficiency (Alliance Brief at 26). Alliance claims that National Grid erroneously projects that Massachusetts electricity consumption will reach approximately 12,000 gigawatt-hours ("GWh") by 2025, while a recent DOER report indicates only approximately 7,800 GWh (Alliance Brief at 26). Alliance notes that National Grid's error is of a magnitude that approximates the output of three facilities of Cape Wind's size (Alliance Brief at 26).

Finally, Alliance claims that National Grid's analysis understates the supply of RECs because it holds the supply curve flat at 1,441 GWh, using the resources currently in the ISO-NE interconnection queue (Alliance Brief at 26-28). Alliance argues that this method is inaccurate because it: (1) uses the untenable assumption that no new renewable projects will be developed after 2015; (2) ignores the effect of the special solar REC ("S-REC") program, which will add 455 GWh of S-RECs; and (3) ignores upcoming supply influences like the Northern Pass transmission project and the coordination between government officials in New England and Canada to develop more clean energy in the region (Alliance Brief at 26-28).

(E) CLF et al.

CLF et al. assert that it is difficult or impossible to imagine that Massachusetts will meet its RPS targets without the Cape Wind facility, given that the RPS requirement increases from eight percent in 2013 to 23 percent in 2028 (CLF et al. Brief at 34). CLF et al. claim

that New York and the New England states have similarly ambitious renewable energy programs, which means that they will compete for available RECs (CLF et al. Brief at 34-35). CLF et al. contend that 40 percent of current Massachusetts RPS requirements are currently met by biomass, and that its eligibility as a Class I resource is highly uncertain given DOER's proposed regulatory changes (CLF et al. Brief at 35). CLF et al. argue that the uncertainty about biomass places an additional premium on achieving diversity among renewable resources, as recognized by the Department in Long-Term Contracts for Renewable Energy, D.P.U. 08-88-A (2009), and that the Cape Wind facility must become part of the supply (CLF et al. Brief at 35-36). CLF et al. claim that the benefits associated with meeting the Massachusetts RPS requirements and objectives must be considered when evaluating the cost-effectiveness of PPA-1 (CLF et al. Brief at 20).

(F) Department of Energy Resources

According to DOER, National Grid and Cape Wind have provided three robust and conservative analyses in the record that conclude that there are not enough renewable projects in development to meet the region's growing demand (DOER Brief at 22, citing Exhs. NG-SFT at 71; NG-SFT-3; NG-MNM-5, at 4-5; CW-RBS-1, at 20-23). DOER argues that this conclusion holds true from the perspective of: (1) Massachusetts alone; (2) all southern New England states; (3) all of New England; (4) New England and New York, together; and (5) New England and New York with Canada (DOER Brief at 22-23). DOER claims that this conclusion holds true under a range of economic assumptions (DOER Brief at 22-23). DOER asserts that the record shows that even if all renewable resources that are

currently in development are built (including those in preliminary planning stages), Massachusetts and the region will fall well below their RPS goals (DOER Brief at 40).

DOER contends that National Grid's analysis may understate the actual gap between future REC supply and demand because it assumes: (1) a 100 percent realization rate for renewable energy projects in the ISO-NE interconnection queue;¹²⁵ and (2) that biomass facilities will remain a significant source of REC supply, even though their future eligibility is highly questionable (DOER Brief at 24-26).¹²⁶ DOER claims that while the need for the Cape Wind facility to fill the large gap between renewable supply and demand was unquestionable at the outset of this case, such need has potentially increased since then (DOER Brief at 25).

DOER argues that Alliance's claims about the supply of and demand for RECs have numerous problems. First, DOER contends that Alliance's claim that there are 832 MW of qualified Class I REC facilities is grossly overstated. Second, DOER argues that Alliance improperly included 284 MW of waste-to-energy facilities as qualified facilities (DOER Brief at 26-27). Also, Alliance included 468 MW from the Cape Wind facility in its supply total, despite its opposition to the facility (DOER Brief at 26-27). Further, Alliance did not account for the potential of a diminished role for biomass as a Class I resource, even though DOER's

¹²⁵ DOER notes that a more accurate probability value is between 20 and 40 percent (DOER Brief at 24-26).

¹²⁶ DOER notes that, based on the results of the Manomet Center for Conservation Sciences study, it has proposed amendments to RPS regulations with three important changes for biomass facilities and, if these regulations are adopted as proposed, there will be a diminishing role for existing biomass facilities in meeting RPS requirements (DOER Brief at 25).

2008 RPS Compliance Annual Report was issued on July 29, 2010 and it included information on the expected change in the eligibility of biomass (DOER Brief at 27). DOER argues that Alliance's contention that there is no gap if the regional supply of renewable energy is compared to National Grid's demand for RECs reflects a profound misunderstanding of how New England renewable energy markets actually function (DOER Reply Brief at 12-13). DOER states that in a regional market like New England's, it is meaningless to measure net supply against the demand of one market participant (DOER Reply Brief at 12-13). According to DOER, in consideration of these flaws, the Department should place little weight on Alliance's testimony concerning the supply of and demand for renewable energy (DOER Brief at 26-27).

iv. Analysis and Findings

(A) Introduction

National Grid presents an analysis of the supply of and demand for renewable energy resources in the region, upon which it relies to demonstrate the need for and value of the Cape Wind facility in meeting its RPS (and other environmental) requirements (Exh. NG-SFT at 69). Cape Wind, the Attorney General, CLF et al., and DOER support the method and findings of the analysis (Cape Wind Brief at 20-24; Attorney General Brief at 33; CLF et al. Brief at 34-36; DOER Brief at 22-26). In contrast, Alliance raises several critiques of the analysis, and asserts that the Company has failed to demonstrate the need for PPA-1 for RPS compliance purposes (Alliance Brief at 8, 23-28). The Department first assesses the

reasonableness of the Company's analysis. We then evaluate the benefits of PPA-1 related to RPS compliance.

(B) Supply and Demand Analyses

The Company analyzes the supply of and demand for renewable energy from a regional perspective, using projected renewable energy requirements in the New England states, New York, and the bordering Canadian provinces as the basis for determining demand. Alliance argues that this approach is fundamentally flawed, stating that the Company should have limited its analysis to evaluating whether there will be a sufficient supply of Class I RPS resources in the region to meet its own RPS requirements (Alliance Brief at 23-25). The Department disagrees with Alliance on this matter. As noted by National Grid, Cape Wind, and DOER, Alliance's argument ignores the fact that the Company is part of a regional RPS market in which eligible renewable energy resources throughout New England and bordering control areas have the opportunity to sell their RECs into any New England state's RPS market. As such, the Company competes with the other electric distribution companies in the region (including Massachusetts) for the purchase of these RECs (National Grid Reply Brief at 5-6; Cape Wind Reply Brief at 9-10; DOER Reply Brief at 12-13). Evaluating National Grid's demand for RECs in isolation from regional demand would produce misleading results that would be of no use in this proceeding.

The Company's analysis included four scenarios for electricity load growth (and thus demand for RECs) in the region: (1) ISO-NE's base case; (2) ISO-NE's demand-response case; (3) a high economic growth case; and (4) a low economic growth case (Exh. NG-SFT

at 45-46). Alliance argues that the demand scenarios included in the analysis fail to fully account for the reductions in demand that should be expected to result in future years from the expanded level of energy efficiency programs in Massachusetts (Alliance Brief at 23-25). The Department disagrees. National Grid states that it included the low growth scenario explicitly to test the sensitivity of the analysis to conditions of lower electricity demand, either because of energy efficiency, lower economic activity, or both (Tr. 12, at 2525-2529). One-third of the 69 supply and demand evaluations included in the analysis use the low growth scenario (see Exh. NG-SFT-3). Thus, the Department concludes that the Company's analysis sufficiently took into account the effects of energy efficiency programs in its determination of future demand.¹²⁷

The supply of renewable resources included in the Company's analysis is based on the announced projects in the ISO-NE interconnection queue, assuming that each such project achieves commercial operation on its projected date (Exh. NG-SFT at 53). National Grid Cape Wind, CLF et al., and DOER state that the analysis likely overstates future supply because it: (1) contains optimistic assumptions about new sources of potential supply; and (2) includes biomass resources, which are likely to be very restricted in qualifying for

¹²⁷ Further, other factors may increase National Grid's RPS requirements and thus the gap identified above. Demand for electricity may increase as a result of electrification of the transportation sector if fossil fuel based vehicles shift toward plug-in electric vehicles, especially over the mid- to long-term (Tr. 5, at 1099-1101; Tr. 8, at 1776). Also, economic growth may further increase demand for electricity. Both developments would correspondingly boost National Grid's sales of electricity, thereby raising the number of RECs that it will need for RPS compliance.

Massachusetts' RPS requirements (National Grid Brief at 25-30; Cape Wind Brief at 20-24; CLF et al. Brief at 34-36; DOER Brief at 22-26; National Grid Brief at 25-30). In contrast, Alliance contends that the Company's analysis understates the future supply of renewable resources because it does not: (1) assume any new supply beyond 2015; (2) account for the expected growth of solar energy; or (3) consider additional supplies becoming available through transmission projects (Alliance Brief at 26-27).

The Company's analysis: (1) uses announced resources in the ISO-NE interconnection queue as a proxy for the types of renewable projects that could be developed in the relatively near term, and (2) uses a highly conservative assumption about the potential attrition of these projects (i.e., zero percent in the base case scenario) to take into account the fact that announced projects will be developed to meet future needs (Exh. NG-SFT-R at 7-9). The Department concludes that, because it uses a zero attrition rate for announced resources, National Grid's analysis likely overstates the supply of renewable resource in the short term.

Alliance also contends that National Grid's analysis is flawed because it holds the supply curve flat after introducing the resources currently in the ISO-NE interconnection queue (Alliance Brief at 26-27). We do not agree with Alliance that this methodological assumption indicates that the analysis is flawed. The Company has not intended for its analysis to be a full build-out scenario for all years of the PPA-1 contract (see Exh. NG-SFT at 55). The Company has been explicit about what the analysis does: it uses a proxy for supply that includes all announced projects being built based on the ISO-NE queue; it models demand based on RPS requirements that increase annually; and the modeling shows a significant and growing gap

between supply and demand. The Company then examines whether the gap identified is likely to be filled by new renewable resources, based on a number of considerations. We find that this method is appropriate for National Grid's purposes, and we address below the conclusions that can be drawn from the analysis.

The Department notes that the inclusion of biomass resources in the Company's analysis is likely to overstate the supply of RPS-eligible resources in the future. If DOER adopts in final form its proposed RPS regulations, the eligibility of biomass resources, which currently provide approximately 40 percent of the Massachusetts RPS requirement, is likely to be significantly restricted, both in the short and long terms (Tr. 11, at 2291-2294; see also Exh. DOER-3 (Renewable Energy Portfolio Standards: Class I, 225 C.M.R. § 14.00 et seq. (revisions proposed September 17, 2010)).¹²⁸

We further note that we do not agree with Alliance's view that National Grid's analysis understates the potential for solar resources to provide renewable generation. The Company acknowledges that its analysis does not include a separate treatment for solar resources,¹²⁹ stating that it is not likely that new solar projects will produce a significant percentage of the

¹²⁸ DOER's proposed regulations would subject biomass resources (both new and existing) to new standards that: (1) limit woody biomass fuel to residues and energy crops; (2) impose a minimum efficiency limit of 40 percent on biomass conversion technologies for partial REC credit and a limit of 60 percent for full REC credit; and (3) require that a facility reduce GHG emissions by at least 50 percent compared to emissions of natural gas combined cycle units over a 20-year period (Tr. 11, at 2291-2293; see DOER Brief at 25-26).

¹²⁹ The Company notes that larger solar installations would likely require an interconnection study, and thus would have been included in the analysis as an announced project (Exh. NG-SFT-R at 24 n.25).

total energy generated in the Northeast in the near future (Exh. NG-SFT-R at 24-25).¹³⁰ We note that the contribution from solar energy is likely to be limited because while the Massachusetts S-REC program is designed to result in 400 MW, typically solar facilities are smaller, more expensive, and with a lower capacity factor than other renewable resources.¹³¹ The Department concludes that the Company's treatment of solar was appropriate. We note that, even if the Company had assumed more aggressive levels of solar resource development, any realistic scenario would not materially affect the results of the analysis regarding the gap between renewable energy supply and demand.

Finally, Alliance contends that the Company's analysis understates the future supply of renewable resources because it does not consider several large transmission projects (e.g., the Northern Pass project) that are already under development or in advanced planning stages (Alliance Brief at 26-27). The Department disagrees for two reasons. First, the Company explicitly addresses the significant expansion of the transmission system that would be required to support the integration of large quantities of renewable energy into southern New England, where the majority of the region's load is located (see, e.g., Exh. NG-SFT at 62-68). The

¹³⁰ The Company cites a report by the Massachusetts Clean Energy Center that identifies 28.6 MW of solar installations as of August 2010, which represents a small but steady increase from the level in 2006 of 3.8 MW (Exh. NG-SFT-R at 24-25).

¹³¹ See generally 225 C.M.R. § 14.05(4)(j) (emergency regulation proposed January 1, 2010); Hilary Flynn et al., System Dynamics Modeling of the Massachusetts SREC Market, Sustainability 2747-2748 (2010), available at <http://www.mdpi.com/2071-1050/2/9/2746/pdf> (visit mass.gov/eea; then follow "Energy, Utilities and Clean Technology"; "Renewable Energy"; "Solar"; "RPS Solar Carve-Out").

Company cites to a 2009 ISO-NE study¹³² that “evaluated a range of generic sources of renewable energy available to New England, [and] conceptual transmission configurations to integrate these resources into the power grid” One conclusion of the study is that in “cases that model existing transmission constraints and higher penetrations of wind, the system would not be able to operate without substantial transmission reinforcements” (Exh. NG-SFT at 62-65).¹³³ Second, the Company presented a hypothetical scenario in which a new 2,000 MW transmission line is added to the New England transmission infrastructure to connect resources located in Eastern Canada with the electric market in New England (Exh. NG-SFT-R at 17-19). The scenario assumed that the line would carry 2,000 MW from Canadian land-based wind projects with a capacity factor of 32 percent. Assuming that the line were put in service in the 2015 to 2016 timeframe, the results of the scenario show that such a large new supply of renewable energy in New England would eliminate the renewable energy gap for a short period of time (approximately two to three years), but that the growing demand

¹³² The “New England 2030 Power Study: Report to the New England Governors 2009 Economic Study: Scenario Analysis of Renewable Resource Development.”

¹³³ As discussed in Section IX.B, below, the Company cites to three transmission proposals that have made progress in moving their projects forward in recent years: (1) the Northern Pass Project, which involves the construction of a new 2,000 MW high-voltage direct-current (“HVDC”) interconnection between Quebec and southern New Hampshire; (2) the Northeast Energy Link, which involves the construction of new transmission facilities to connect southern New England with resources located in Northern Maine, New Brunswick, other resources in Atlantic Canada, and Quebec; and (3) the Green Line, which involves the construction of a 600 MW HVDC transmission line that would run underwater from Wiscasset, Maine to Boston (Exh. NG-SFT at 65-66). The Company provides examples of the length of time likely to be required to complete such projects (Exh. NG-SFT-R at 16-17).

for renewable energy would soon exceed supply, and the resulting shortfall would grow significantly through the term of PPA-1 (Exh. NG-SFT-R at 17-19).

Based on all of the above, the Department finds that the Company's analysis of renewable resource supply and demand is valid and provides useful information for the Department's consideration in evaluating the RPS compliance benefits of PPA-1. To provide some context regarding the magnitude of the projected gap contained in the Company's analysis, we assess the results of one of the key scenarios presented by the Company, which looks at the entire New England region and uses the base case electricity forecasts (Exh. NG-SFT-3, at 22).¹³⁴ In this scenario, the analysis projects a renewable resource shortfall in the region of 8,960 GWh in 2020 and 14,031 GWh in 2025, even with the inclusion of the Cape Wind facility and biomass resources. In order to get a sense of how much wind development would be needed to fill this gap, it is useful to convert these energy (GWh) shortfalls into capacity (MW) shortfalls. Assuming for the sake of simplicity that all of the renewable energy gap is filled with wind energy, and that all of the new wind capacity has a capacity factor equal to the Cape Wind facility (37.1 percent), it would be necessary to construct 2,757 MW of wind projects by 2020, and 4,317 MW of wind projects by 2025.¹³⁵

¹³⁴ We consider this scenario to be an illustrative base case because: (1) of the assumptions used in this scenario, and (2) National Grid chose to use this scenario in its sensitivity analysis assessing the impacts of a new 2,000 MW transmission line carrying wind power from Canada to New England (Exh. NG-SFT-R at 19).

¹³⁵ This amount of capacity would represent roughly nine percent of the existing regional generating capacity (approximately 31,000 MW) in 2020 and approximately 14 percent of the existing capacity in 2025. See Maria Agustin, Independent System Operator-New England, ISO Installed Capacity Requirements (ICR), Representative

This is equivalent to nearly six new Cape Wind projects by 2020, and over nine new Cape Wind projects by 2025. While many new renewable projects are likely to be proposed and constructed during this timeframe that will help provide this renewable energy, it is highly questionable that there will be enough to close a gap this big.

(C) RPS Compliance Benefits

National Grid acknowledges that if a shortfall of renewable energy supply materializes in the future, then load-serving entities can simply pay the ACP to meet their RPS obligations (National Grid Brief at 4).¹³⁶ The Company asserts, however, that the true purpose of the RPS requirement is to create an increasing demand for renewable energy supply, and not merely to collect funds through ACP payments (National Grid Brief at 4). The Company alleges that, by enacting Section 83, the Legislature recognized that RPS purchase obligations alone are insufficient to encourage the development of renewable energy resources, and that Section 83 will help facilitate the financing of renewable energy facilities and ensure an adequate supply of renewable power to meet future RPS obligations (National Grid Brief at 4). The Company argues that Section 83 “establishes a missing piece of the equation that will help facilitate

Future Net ICR and Operable Capacity Analysis for RSP10, at 5 (April 2010),
available at
http://www.isone.com/committees/comm_wkgrps/relblty_comm/pwrsuppln_comm/mtrls/2010/apr122010/future_icr_2014-19_apr_2010.pdf.

¹³⁶ Retail sellers of electricity may pay the ACP in lieu of purchasing RECs. The level of the ACP was originally set at \$50 per REC in 2003 (i.e., per MWh) and is increased annually by the Consumer Price Index. 225 C.M.R. § 14.08(3)(a). ACP payments are made to the Massachusetts Clean Energy Center, and are used to further the development of renewable energy.

financeable renewable energy projects in order to help ensure an adequate physical supply of renewable generation to meet future RPS obligations” (National Grid Brief at 4).

We find National Grid’s arguments about the purpose of the RPS requirement persuasive. Section 83 is a part of the Green Communities Act where the Legislature’s goal was to significantly advance the development of renewable energy resources in Massachusetts and the region. St. 2008, c. 169, pmb1. This goal is apparent in several provisions of the Green Communities Act, including overall statewide renewable energy goals (St. 2008, c. 169, § 116), the net metering provisions (St. 2008, c. 169, § 78), the solar procurement provisions for electric distribution companies (St. 2008, c. 169, § 58), a significant increase in the RPS targets (St. 2008, c. 169, § 32), and Section 83 itself.

Taken together, the RPS requirements and the Section 83 provisions of the Green Communities Act encourage distribution companies to facilitate the development of renewable generation in the region. This goal will not be realized if payment of the ACP is the only means that distribution companies use to comply with the RPS. Accordingly, the Department finds that the ability of the Cape Wind facility to contribute to the physical supply of renewable energy generation and help National Grid meet its future RPS requirements is consistent with Section 83 and the objectives of the Green Communities Act as a whole and, therefore, should be considered a significant benefit of PPA-1.

c. Global Warming Solutions Act

i. Introduction

Enacted in August 2008, the GWSA, G.L. c. 21N, establishes a number of requirements for reducing greenhouse gas (“GHG”) emissions in the Commonwealth.¹³⁷ The GWSA includes targets that mandate that the Commonwealth: (1) reduce its GHG emissions by ten to 25 percent of 1990 levels by 2020; (2) reduce its GHG emissions by at least 80 percent of 1990 levels by 2050; and (3) develop interim 2030 and 2040 emissions limits, to “maximize the ability of the [C]ommonwealth to meet the 2050 emissions limit.”

G.L. c. 21N, §§ 3(b), 4(a). In addition, the GWSA mandates that state agencies establish a GHG registry and reporting system, and calculate a 1990 baseline emissions level as well as a 2020 business-as-usual projection. G.L. c. 21N, §§ 2, 3. The GWSA further mandates that state agencies implement “regulations establishing a desired level of declining annual aggregate emission limits for sources or categories of sources that emit greenhouse gas emissions,” and establish “[e]missions levels and limits associated with the electric sector.” G.L. c. 21N, §§ 3(c),(d).¹³⁸

The GWSA does not specify policies for achieving the GHG emissions reduction targets. Rather, it broadly empowers certain state agencies to conduct analysis and implement

¹³⁷ The GWSA defines greenhouse gas as, “any chemical or physical substance that is emitted into the air and that the [D]epartment [of Environmental Protection (“DEP”)] may reasonably anticipate will cause or contribute to climate change including, but not limited to, CO₂, methane, NO_x, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.” G.L. c. 21N, § 1.

¹³⁸ The statute directs the Massachusetts Executive Office of Energy and Environmental Affairs and DEP, in consultation with DOER, to develop such regulations.

policies in order to realize the targets. State agencies have begun implementation by instituting the GHG registry reporting requirement and performing initial calculations of the 1990 baseline and 2020 business-as-usual projection.¹³⁹ In addition, the GWSA requires the Secretary of the Executive Office of Energy and Environmental Affairs, no later than December 31, 2010, to adopt a GHG emissions target for 2020 between ten and 25 percent below 1990 emissions and a plan for meeting that target. G.L. c. 21N, § 4(a).

ii. Positions of the Parties

(A) National Grid

National Grid asserts that PPA-1 will provide benefits to its customers by helping the Commonwealth comply with the GWSA (Exh. DPU-NG-8-3). National Grid expects that the Cape Wind facility could reduce emissions by over 800,000 metric tons¹⁴⁰ of CO₂ per year (National Grid Brief at 36-37, citing Exhs. NG-SFT at 126; CLF et al. Brief at 34-36; Exh. DPU-NG-8-1). In addition, National Grid notes that GHG emissions reductions could have an economic value of \$1 billion to \$2.7 billion, based on an estimate of the social cost of carbon prepared by CLF et al. The Company adds, however, that it preferred to consider

¹³⁹ According to a report of the DEP made pursuant to the GWSA, annual emissions from the electric sector in the 1990 baseline year were roughly 27.7 million metric tons of carbon dioxide equivalent (“MMTCO₂e”) or roughly 29 percent of the Commonwealth’s 1990 total of 94.4 MMTCO₂e (see Exh. DPU-NG-8-1; “Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020 Business As Usual Projection” (July 2009), http://www.mass.gov/dep/air/climate/1990_2020_final.pdf at 4, 7).

¹⁴⁰ While National Grid initially presented its projection of emissions reductions as 729,588 tons of CO₂, it converted this to metric tons to be consistent with the GHG accounting convention used by the DEP in its analysis (see Exh. DPU-NG-8-1).

benefits from avoided emissions costs in a qualitative fashion, given the inherent difficulty of quantifying them (National Grid Brief at 37, citing Exh. NG-SFT at 126).

National Grid claims that the aggressive Massachusetts carbon reduction targets cannot be met without offshore wind, and that PPA-1 is the catalyst needed for the development of offshore wind in Massachusetts, in the region, and in the nation (Exh. NG-RAR at 5).

According to the Company, the Cape Wind facility may be offering power at a higher price than today's market prices, but by squarely meeting the climate change challenge it will benefit generations to come (Exh. NG-RAR at 9).

(B) Cape Wind

According to Cape Wind, the facility will help the Commonwealth achieve the GWSA mandates in a timely, cost-effective and comprehensive manner, with the benefit of avoiding costs that electricity customers would otherwise incur (Cape Wind Reply Brief at 17). Cape Wind asserts that in the evaluation of cost-effectiveness, the cost of the marginal resource that is required to satisfy a particular policy goal sets the economic bar (Cape Wind Brief at 25, citing Exh. CW-RBS-9, at 14). Cape Wind claims that, in general, meeting a particular policy goal may require a pool of different resources with different costs, and that the most expensive resource from the total pool of required resources should determine the upper limit of cost-effectiveness (Exh. CW-RBS-9, at 14-15).

(C) Attorney General

The Attorney General states that the Department should not include costs to comply with the GWSA in its cost-effectiveness analysis because future compliance costs for electricity

customers associated with the GWSA are currently unknown (Attorney General Reply Brief at 18). The Attorney General argues that emissions savings estimates and GWSA compliance costs remain speculative at this time (Attorney General Reply Brief at 18). The Attorney General states that the social costs of carbon presented by DOER are not an appropriate estimate of future GWSA compliance costs (Attorney General Reply Brief at 18).

(D) Alliance to Protect Nantucket Sound

Alliance argues that the Cape Wind facility is not needed for GWSA compliance, and that the Company has failed to establish that more expensive resources like the Cape Wind facility are necessary due to insufficient supply (Alliance Brief at 8). Alliance asserts that a rigorous competitive procurement process must be used to ensure that GWSA compliance is met in a cost-effective way (Alliance Brief at 40). Alliance alleges that if the Department approves PPA-1, the effect will be to establish a new, high baseline for renewable energy resources that would increase the cost of meeting the GWSA targets (Alliance Brief at 8, 40).

(E) CLF et al.

CLF et al. assert that the Department should include the avoidance of reasonably anticipated GWSA compliance costs that will otherwise be incurred and reflected in future electricity prices as a benefit of the Cape Wind facility (CLF et al. Brief at 27). According to CLF et al., the Department has previously determined that existing state law and likely federal measures to control GHGs give rise to reasonably anticipated environmental compliance costs that will be reflected in future electricity prices in the Commonwealth and, as a result, has

included such avoided costs in calculating energy efficiency benefits (CLF et al. Brief at 29, citing D.P.U. 08-50-A at 17).

CLF et al. claim that the value of avoided costs for reduced GHG emissions can be calculated by assuming that the social cost of carbon¹⁴¹ is \$65 per ton, and escalating it by two to four percent per year, which they claim is conservative (CLF et al. Brief at 30, citing Exh. CLF/CPN-GY at 33-34).¹⁴² CLF et al. assert that, using this assumption, the value of the Cape Wind facility, based on the avoided costs of reducing GHG emissions, would be in the range of \$1.2 to \$2.7 billion, using a three percent discount rate (CLF et al. Brief at 30, citing Exh. CLF/CPN-GY 33-34).¹⁴³

CLF et al. allege that it will be virtually impossible to meet the Commonwealth's GWSA GHG reduction targets without significant reductions from the electricity sector and to achieve such reductions without tapping the considerable potential of offshore wind (CLF et al. Brief at 36, citing Tr. 5, at 1044-1045). CLF et al. contend that the Department should view the Cape Wind facility as a gateway to the development of other offshore renewable energy

¹⁴¹ The social cost of carbon is meant to indicate the full cost to society of the effects of climate change, as expressed in terms of dollars per ton of CO₂ emissions (Exh. CLF/CPN-GY at 33).

¹⁴² According to CLF et al., this estimate is generally consistent with other estimates of the value of avoided costs in this proceeding and Department precedent, based on existing and the most likely state, regional, and federal GHG emissions reduction requirements (CLF et al. Brief at 30-33).

¹⁴³ This estimate is based on the expected GHG emissions reductions from operation of the entire 468 MW Cape Wind facility (Exh. CLF/CPN-GY at 33).

that will enable the GWSA mandates to be met (CLF et al. Brief at 36, citing Tr. 5, at 1106; Tr. 12, at 2367, 2370).

(F) Department of Energy Resources

DOER argues that the Cape Wind facility will provide unique benefits in terms of GWSA compliance because its size allows it to produce more carbon-free electricity than most other renewable energy facilities (DOER Brief at 39, citing Tr. 5, at 1042-1043).¹⁴⁴ DOER contends that offshore wind will be required for Massachusetts to meet its GWSA goals and that, by facilitating the construction of the Cape Wind facility, PPA-1 unlocks the potential for offshore wind to make a significant contribution to meeting these goals (DOER Brief at 38-39, citing Tr. 5, at 1030-1034).

DOER argues that avoided costs of environmental compliance should be included as a benefit for determining the cost-effectiveness of PPA-1 (DOER Brief at 37). DOER asserts that while regulations have not yet been finalized, the GWSA gives state agencies broad authority to regulate GHG emissions, including emissions from the electric sector (DOER Brief at 38). DOER alleges that the Commonwealth is unlikely to achieve the ambitious goals of the GWSA without additional costs and that most GHG reductions, and presumably costs, are likely to occur in the electric sector (DOER Brief at 38, citing Tr. 5, at 1099-1103).

DOER contends that PPA-1 will allow National Grid's customers to reduce their future GWSA compliance costs (DOER Brief at 38, citing Tr. 5, at 1105-1106). DOER claims that PPA-1

¹⁴⁴ We note that DOER's estimates are also based on expected CO₂ emissions reductions from the entire 468 MW Cape Wind facility.

will allow future developers of offshore wind to benefit from reduced costs, which will allow Massachusetts to meet its GHG targets at a lower cost (DOER Brief at 39, citing Tr. 5, at 1035-1036; Tr. 11, at 2251-2254). According to DOER, National Grid correctly argues that such a contract will serve as a down payment on GWSA compliance costs, and that any steps to reduce GHG emissions now will reduce the magnitude of reductions necessary in the future, thereby lowering the future marginal cost of achieving GWSA targets (DOER Brief at 38, citing Tr. 12, at 2366-2367).

DOER asserts that, while the estimates of future electricity prices presented in this proceeding have included some costs to electricity customers from compliance with current and future GHG regulations, they are incomplete because they have not included GWSA compliance costs in the price estimates (DOER Brief at 37). DOER claims that the Cape Wind facility is projected to reduce over 800,000 metric tons of CO₂ emissions in the Commonwealth per year, thus achieving nearly a one percent reduction from 1990 baseline levels of 94.4 MMTCO₂e (DOER Brief at 39-40, citing Exh. DPU-NG-8-1). To assess the value of such avoided future compliance costs, DOER suggests assuming that the Cape Wind facility displaces the marginal cost to the Commonwealth of achieving the final 800,000 metric tons of required emissions reductions, or roughly one percent, which is likely to be very expensive (DOER Brief at 40). Using the estimates in the record about the social cost of carbon, DOER calculates that the value of the avoided compliance costs of these GHG reductions over the 15-year duration of PPA-1 will result in savings to National Grid customers of between \$924 million and \$1.2 billion, in nominal dollars (DOER Brief at 41,

citing Exh. CLF-CPN/GY at 28-36).¹⁴⁵ According to DOER, this amount may overstate the avoided GWSA compliance costs, but it sets the upper range of an estimate (DOER Brief at 40-41).

iii. Analysis and Findings

As outlined above, the GWSA emissions reduction targets are very aggressive. The exact costs of achieving them are uncertain, but there is no question that the costs will be significant. Reductions of this magnitude will likely require significant investments across all sectors of society.

The federal government is also expected to place nationwide limits on GHG emissions in the near- to mid-term future, with the EPA regulating them as a criteria pollutant under the Clean Air Act¹⁴⁶ apart from whatever action Congress may take with respect to climate legislation. Such regulation would also impose compliance costs on Massachusetts' electric distribution companies. However, the Department will primarily focus its review on the reduction requirements and compliance costs associated with the GWSA, because it is an existing legal mandate and, therefore, more certain than potential federal requirements at this time.

¹⁴⁵ DOER's range of estimated costs includes only CO₂ reductions from PPA-1, as opposed to CO₂ reductions from the whole 468 MW facility over its expected 25-year useful life (DOER Brief at 41).

¹⁴⁶ See Massachusetts v. U.S. Envtl. Prot. Agency, 549 U.S. 497 (2007).

The Department must determine whether it is appropriate to consider in its cost-effectiveness analysis the benefits of PPA-1 in avoiding future GWSA compliance costs.¹⁴⁷ National Grid, Cape Wind, DOER, and CLF et al. state that the Department should include the avoidance of future GWSA compliance costs as a benefit (Cape Wind Reply Brief at 17; CLF et al. Brief at 27; CLF et al. Reply Brief at 9; DOER Brief at 14, 37-41; National Grid Brief at 36-37). In contrast, the Attorney General asserts that the Department should not include avoided future GWSA compliance costs as a benefit because they are unknown and all estimates about them are speculative (Attorney General Reply Brief at 18).

As described in Section VII.B, above the Department has the authority to “direct the avoidance of conditions that a utility might experience, provided that reasonably anticipated future circumstances will impose costs on the utility that will be detrimental to the interests of ratepayers.” 419 Mass. at 246. Nothing in the Supreme Judicial Court’s decision suggests that costs must be precisely quantifiable for the Department to have authority to order their avoidance, so long as such costs are reasonably likely to be incurred. Indeed, it would run afoul of the Supreme Judicial Court’s logic to conclude that difficulty of quantification requires such costs to be valued at zero. Moreover, the GWSA is law, rather than merely a

¹⁴⁷ The Department recognizes that the electricity price forecasts used in this case to estimate market revenues include projections of GHG emissions compliance costs, based on a federal carbon cap-and-trade requirement that would begin in 2014-2015 (Exhs. NG-MNM at 24-25; AG-NG-2-16, Att. 4 at 12 (Confidential); NG-MNM-6, at 8). However, we further note that the full GWSA compliance costs are not reflected in these electricity price forecasts (Tr. 12, at 2379-2380). This section addresses the additional GHG emission compliance costs, beyond those already included in the electricity price forecasts.

“reasonably anticipated future” circumstance, which makes the benefits of avoiding the costs of complying with the law all the more compelling.

We note further that Section 83 specifically requires the Department to consider several benefits that are difficult to quantify, such as moderating system peak load requirements and providing enhanced electricity reliability. To ignore benefits simply because they are difficult to quantify would unjustifiably skew the comparison of costs and benefits. Therefore, we find that it is appropriate for the Department to consider the benefits of avoided GWSA compliance costs in our analysis of PPA-1.

Additionally, although GWSA compliance costs are difficult to quantify, we conclude that they will be large, and that the benefits of the Cape Wind facility’s contribution to avoiding them will be correspondingly significant. Based on the GWSA’s timing and targets noted above, illustrative GHG emissions reduction requirements are presented in Table 5, along with estimated effects of the Cape Wind facility and PPA-1 on these requirements.

Table 5: Illustrative GWSA-Required Reductions in GHG¹⁴⁸

GWSA-Required GHG Reductions: Relative to the 1990 level of 94.4 MMTCO₂e				
	Estimated GWSA Targets			
Year	2020	2030	2040	2050
Percentage Reduction Required (estimated for first three)¹⁴⁹	20%	40%	60%	80%
Amount of allowed emissions (MMTCO₂e)	75.5	56.6	37.8	18.9
Reductions from 1990 Level (MMTCO₂e)	18.9	37.8	56.6	75.5
Reductions from electricity industry (MMTCO₂e, proportional)¹⁵⁰	5.6	11.1	16.7	22.2
Cape Wind Impact: 0.8 MMTCO₂e				
	Reduction (%)			
Cape Wind impact as a percentage of state total	4.2%	2.1%	n/a	n/a
Cape Wind impact as a percentage of electricity industry	14.4%	7.2%	n/a	n/a
PPA-1 impact as a percentage of state total	2.1%	1.1%	n/a	n/a
PPA-1 impact as a percentage of electricity industry	7.2%	3.6%	n/a	n/a

¹⁴⁸ Source: Massachusetts Department of Environmental Protection, Statewide Greenhouse Gas Emissions Level: 1990 Baseline and 2020 Business as Usual Projection (July 2009), available at http://www.mass.gov/dep/air/climate/1990_2020_final.pdf.

¹⁴⁹ In order to approximate the targets for 2020, 2030 and 2040, we adopt National Grid's estimate that the interim targets will progress towards the 2050 target in a linear fashion (Exh. DPU-NG-8-2). The actual targets may vary somewhat from those presented here.

¹⁵⁰ We assume that required reductions from the electric sector will be based on its proportion of total state emissions in 1990. In 1990, GHG emissions from the electric sector comprised 27.8 MMTCO₂e, or 29.5 percent of the total of 94.4 MMTCO₂e. In 1990, GHG emissions from the electric sector comprised 27.8 MMTCO₂e, or 29.5 percent of the total of 94.4 MMTCO₂e.

As Table 5 shows, PPA-1 and the Cape Wind facility will make meaningful contributions toward helping National Grid and the Commonwealth meet GWSA emissions reduction targets in the electricity sector.¹⁵¹ In other words, the Cape Wind facility (i.e., as a 468 MW facility) would contribute 14.4 percent of the reductions required in the overall electric sector by 2020, and PPA-1 would achieve 7.2 percent of the reductions required by 2020. These are large GHG emissions reductions, attributable to the size of the Cape Wind facility and its relatively high capacity factor. PPA-1 and the Cape Wind facility will contribute to achieving a portion of the emissions reductions necessary to comply with the GWSA targets through 2027, and potentially through 2037. For these reasons, we find that PPA-1 will provide benefits in terms of avoiding future GWSA compliance costs, even though future compliance costs are not yet known.

We note that some parties recommend that the benefits of avoiding GWSA compliance costs can be estimated with reference to the potential dollar value of required CO₂ emission reductions. CLF et al. estimate that the social cost of carbon is equal to \$65 per ton of CO₂ (Exh. CLF/CPN-1, at 28-36). Using CLF et al.'s estimate, DOER calculates potential GWSA compliance costs, finding that CO₂ reductions from the Cape Wind facility could be worth as much as \$924 million to \$1.2 billion (DOER Brief at 40-41).¹⁵² DOER acknowledges that its

¹⁵¹ In addition, PPA-1 has a term of 15 years with an option to extend for an additional ten years. Therefore, if National Grid activates its option to extend the contract, the GWSA compliance benefits of PPA-1 would also extend until the end of 2037.

¹⁵² These estimates are based on the emission reductions from the entire 468 MW of the Cape Wind facility. The reductions associated with PPA-1 would be half of these.

calculation should be considered an upper range of compliance costs because the social cost of carbon may be higher than the cost of GWSA compliance (DOER Brief at 40-41).

Nonetheless, DOER argues that this estimate provides a useful context for considering the potential value of GWSA compliance costs (DOER Brief at 40-41).

While these estimated values of CO₂ emissions reductions help frame the potential magnitude of GWSA compliance costs, particularly as an upper boundary, we will give these specific estimates little weight in our assessment of the value of avoided GWSA compliance costs. We conclude that there is insufficient record evidence to show that the social cost of carbon estimated by CLF et al. is a reasonable approximation of the costs of complying with the GWSA.

We agree with DOER that the electric sector is likely to play a proportionally larger role in achieving emissions reductions, relative to other sectors (DOER Brief at 39, citing Tr. 12, at 2366-2367). This is because the electric sector has opportunities to reduce emissions at lower cost than other sectors, by reducing: (1) electricity consumption through low-cost demand resources (e.g., energy efficiency, demand response, and distributed generation); and (2) the GHG emissions from electricity generation through low-carbon or carbon-free options (e.g., fuel switching, repowering with more efficient generators, renewable technologies, clean coal with carbon sequestration, and new nuclear technologies) (Tr. 5, at 1099-1102). Plus, the electric sector has fewer emissions sources relative to others like the transportation sector and the home heating sector, and thus is easier to regulate.

Further, other sectors may need to reduce their own emissions through increased electrification, which could significantly increase overall electricity demand and put additional pressure on the electric sector to reduce emissions.¹⁵³ In fact, as a result of such shifts, Massachusetts electricity demand could increase significantly over time despite any reductions in demand through aggressive energy efficiency programs (Tr. 8, at 1776).¹⁵⁴

Finally, the GWSA itself recognizes the importance of reducing GHG emissions in the electric sector, as evidenced by its requirement that GHG limits be established specifically for the electricity sector – the only sector to be singled out. See G.L. c. 21N, § 3(c). The GWSA also requires relevant state agencies to “promulgate regulations that reduce energy use, increase efficiency and encourage renewable sources of energy in the sectors of electricity generation, buildings and transportation.” G.L. c. 21N, § 6. For these reasons, the Department concludes that GHG emission reductions from the electric sector will be vitally important – likely even more important than reductions from other sectors – in complying with the GWSA.

This leads us to consider the role that offshore wind will need to play in contributing to the GHG emissions reductions from the electric sector. Several parties to this case argue that

¹⁵³ We note that this is especially likely to occur within the transportation sector, where automobiles may shift toward plug-in electric vehicles, especially over the mid- to long-term (Tr. 5, at 1099-1101; Tr. 12, at 1775-1776).

¹⁵⁴ See, e.g., G.L. c. 25, § 21(a), which mandates that the electric distribution companies pursue all cost-effective energy efficiency, and the Department’s recent Order approving the three-year electric energy efficiency plans, D.P.U. 09-116 through D.P.U. 09-120.

offshore wind facilities, and Cape Wind in particular, must be developed in order to meet those requirements (Exh. NG-RAR at 5). DOER states that offshore wind is needed for Massachusetts and, for that matter, the larger region, to meet the GWSA's ambitious goals (DOER Brief at 39). CLF et al. claim that it is virtually impossible to imagine how the GHG emissions reduction targets of the GWSA can be met without at least proportional reductions from the electric sector, and that it is similarly difficult to imagine how such reductions can be achieved in the electric sector without meaningfully tapping into the considerable clean energy potential of offshore renewable energy (CLF et al. Brief at 36).

The Department agrees with these conclusions. First, as we have observed above, the GWSA will require significant reductions in GHG emissions. Second, the electric sector will have to play a considerable role in achieving these reductions; probably more than other sectors. Third, the alternatives for reducing GHG emissions from the electric sector are limited. While there is a tremendous opportunity for demand resources to reduce electricity consumption, the options for significantly reducing the emissions from electricity generation face several important limitations. As noted above, there are important limits to the ability of biomass resources and, for the foreseeable future, for solar resources to make a major contribution to reducing GHG emissions.¹⁵⁵ Further, nuclear power faces considerable barriers involving cost, siting, public acceptability, and waste storage and disposal, such that in our

¹⁵⁵ As described in Section VIII, below, the contribution from solar energy is likely to be limited because while the Massachusetts S-REC program is designed to result in 400 MW, typically, solar resources are smaller, more expensive, with a lower capacity factor than other renewable resources.

judgment it is unlikely to be expanded significantly beyond its current capacity in Massachusetts and New England within the timeframe of PPA-1. For similar reasons, the Department expects that generation facilities relying on carbon capture and sequestration technologies are unlikely to play a role in New England within the timeframe of PPA-1.

It is also clear that there are limits to the amount of land-based wind that can be developed in New England and adjoining areas due to siting difficulties and transmission constraints, particularly in the near- to mid-term future (Exh. NG-SFT at 60-68). In contrast, it is widely expected that wind power will play a key role in reducing GHG emissions from electricity generation (Tr. 8, at 1774). The Department concludes that offshore wind will be necessary to comply with the aggressive reduction targets of the GWSA.

Based on all of these considerations, the Department concludes that PPA-1 and the Cape Wind facility will provide benefits to National Grid customers and the Commonwealth in helping to avoid future GWSA compliance costs, and that these benefits should be considered in our evaluation of the cost-effectiveness of PPA-1.

In addition, Cape Wind recommends an alternate means of evaluating whether PPA-1 is cost-effective. Cape Wind argues that, from an economic perspective, the cap for what is cost-effective is the cost of the marginal resource that is required to achieve a particular policy goal.¹⁵⁶ Cape Wind claims that a variety of different resources, each with different cost and performance attributes, may be needed to achieve a particular policy goal, and that all such

¹⁵⁶ In the context of complying with an environmental requirement, the “marginal resource” is the most expensive resource out of the total pool of resources needed to meet that particular requirement.

resources should be considered cost-effective (Cape Wind Brief at 25; Exh. CW-RBS-9, at 14; DOER Brief at 40).

We agree that the marginal cost of complying with a particular policy objective represents the upper limit on cost-effectiveness for the purpose of achieving that objective. There may also be a variety of resources with very different costs and benefits that are all cost-effective for the purpose of achieving a particular objective¹⁵⁷ (see Section VII.B, above). In other words, the marginal cost of achieving a particular objective represents the cost that will be avoided by any measure that achieves that objective, and all measures that cost less than this avoided cost will be considered cost-effective.

In applying this cost-effectiveness perspective to PPA-1 in the context of avoided GWSA compliance costs, it is necessary to assess the likelihood that the cost of PPA-1 will be within the marginal cost of compliance with the GWSA. In other words, it is necessary to assess the likelihood that PPA-1 will be needed to meet the targets mandated by the GWSA. The evidence indicates that it is reasonable to anticipate that PPA-1, and the associated emissions reductions from Cape Wind, will be needed to meet the GWSA targets. As we have concluded above, the emissions targets of the GWSA will be very demanding, the electricity sector will likely be required to play a significant role in meeting those targets, and offshore wind will likely be needed to reduce GHG emissions from the electricity sector. Further, in

¹⁵⁷ Whether it is in the public interest for a distribution company to implement any particular cost-effective measure in order to achieve the policy objective is a separate question, addressed in Section VIII, below.

Section VIII, below, the Department will consider whether the cost of PPA-1 is comparable to the costs of other offshore wind facilities.

For these reasons, the Department concludes that the cost of PPA-1 is likely to be within the marginal cost of compliance with the GWSA, and that on these grounds the PPA-1 contract can be considered cost-effective. As described further in Section VII.E, below, our decision regarding the cost-effectiveness of PPA-1 does not rest on this conclusion. Rather, it is based on a direct comparison of all the contract's costs to all the contract's benefits. Nonetheless, the finding that PPA-1 can be considered cost-effective based on the marginal cost of compliance with the GWSA corroborates our previous finding of a benefit.

6. Enhanced Reliability

a. Introduction

Pursuant to Section 83, the Department must determine that the renewable energy generating resource will “provide enhanced electricity reliability within the [C]ommonwealth.” See also 220 C.M.R. § 17.05(1)(c)1. While Section 83 does not define reliability, the Northeast Power Coordinating Council (“NPCC”) and North American Electric Reliability Council (“NERC”) define it as the ability to contribute to system resource adequacy and system security (Exhs. DPU-CW-3-4; DPU-NG-5-4, at 3-4; APNS-JAL at 31; Tr. 3, at 691-692; Tr. 7, at 1431).¹⁵⁸ In addition to being a required finding pursuant to Section 83,

¹⁵⁸ NERC is the electric reliability organization certified by the Federal Energy Regulatory Commission to establish and enforce reliability standards for the bulk power system. NPCC is one of nine regional electric reliability councils under NERC authority.

like other benefits described in Section VII, above, enhanced reliability is a non-quantifiable but still important benefit of a long-term contract with a renewable energy resource.

b. Positions of the Parties

i. National Grid

According to National Grid, the Cape Wind facility will enhance reliability because it will add a substantial amount of power to the electric grid that will serve load when and where it is needed, which is the essence of enhancing reliability (National Grid Brief at 16). National Grid argues that the Cape Wind facility will inject power at a substantial capacity factor into the electric grid near a major load center in Massachusetts without being interrupted by transmission constraints or bottlenecks (National Grid Brief at 16). National Grid contends that because the facility will be comprised of 130 individual wind turbines and not a single generating unit, most of its turbines will produce electricity whenever the wind is blowing (National Grid Brief at 17, citing Exh. CW-DJD-1, at 15). National Grid asserts that the Cape Wind facility will enhance reliability because of its strategic location in Nantucket Sound, which experiences some of the strongest and most consistent wind conditions in New England (National Grid Brief at 17, citing Exh. CW-DJD-1, at 17). National Grid contends that the Cape Wind facility will have an average 37.1 percent capacity factor, especially during times of system peak load (National Grid Brief at 17). In addition to its overall average capacity factor, National Grid projects that the Cape Wind facility will have an average capacity factor of 26.9 percent during summer peak load, and an average capacity factor of 42.2 percent during winter peak load (National Grid Brief at 17). The Company claims that compared to other intermittent resources such as solar or land-based wind, the variability of the energy

output from the Cape Wind facility will be less pronounced than that of a renewable energy resource with a lower capacity factor (National Grid Brief at 19, citing Exhs. CW-DJD-1, at 16; CW-DJD-4; CW-DJD-6; NG-SFT at 50; NG-SFT-R at 44; NG-MNM at 30; CW-RBS-1, at 25, 48; APNS-NG-1-11).

National Grid claims that the Cape Wind facility will enhance reliability because it will add a large new source of power and diversify the fuel mix in the region (National Grid Brief at 18). As evidence of how the Cape Wind facility will enhance reliability, National Grid cites to statements by MMS, DOE, and ISO-NE (National Grid Brief at 18-19). According to the Company, the statements of these entities show that the addition of a large, new generation resource such as the Cape Wind facility will enhance reliability because it is not tied to the availability and pricing of fossil fuel, especially during the winter months, when these fuels are priced at a premium (National Grid Brief at 19, citing Exh. NG-SFT at 100). First, the Company asserts that MMS determined that the Cape Wind facility would make a substantial contribution to enhancing the region's electrical reliability (National Grid Brief at 18, citing Exh. AG-NG-1-2 (Att. 84, at 6)). Second, the Company claims that DOE estimated what the effect of the Cape Wind facility would have been during the extreme cold weather spell of 2004, and found that there would have been a three-day savings of 184.25 million standard cubic feet of natural gas if the Cape Wind facility had been producing electricity (National Grid Brief at 18-19). Finally, National Grid argues that because of tight natural gas supplies in New England during winter months and the region's dependence on natural gas fired generators, ISO-NE has urged the region to diversify its fuel and technology resources to

enhance reliability (National Grid Brief at 18, citing Exh. AG-NG-1-2 (Att. 47)). National Grid also notes that ISO-NE has concluded that the interconnection of the Cape Wind facility will have no adverse impact on reliability (National Grid Brief at 19, citing Exh. DPU-CW-3-1).

The Company asserts that other potential large-scale renewable energy resources are not as advantageous as the Cape Wind facility because they are remote from load centers, and are often on the other side of a transmission constraint that inhibits the firm delivery of power from those resources into Massachusetts and southern New England (National Grid Brief at 16). The Company argues that major transmission infrastructure upgrades will be needed before renewable generation in northern New England can fully and reliably serve load in Massachusetts and the rest of southern New England (National Grid Brief at 17, citing Exh. NG-SFT at 42). In contrast, the Company claims that the Cape Wind facility will reduce the need for power flows across transmission constraints into the southern part of New England (National Grid Brief at 17, citing Exh. DPU-NG-5-4).

ii. Cape Wind

Cape Wind asserts that the facility will enhance reliability within the Commonwealth in several ways (Cape Wind Brief at 14-16). First, Cape Wind claims that the facility will be operated and maintained in accordance with the highest industry standards, and will use proven equipment that will be supplied, operated, and maintained by Siemens, one of the largest and most experienced manufacturers (Cape Wind Brief at 14-15, citing Exh. CW-DJD-1, at 15; RR-DPU-CW-3 & Att.; RR-DPU-CW-4). Second, Cape Wind states that the facility and its two dedicated 115 kV transmission lines, which have received what it calls “primary” federal

approval, will: (1) be highly reliable; (2) be consistent with industry standards; (3) have no adverse impact on the region's electric system; and (4) require no system upgrades (Cape Wind Brief at 15, citing Exhs. CW-DJD-1, at 15; DPU-CW-3-1(a); DPU-CW-3-2(a)). Third, Cape Wind notes that the facility will add 468 MW of electric supply in close proximity to customer load, which will reduce load on existing transmission lines, mitigate any loss of transmission availability, and better position the system for any contingencies (Cape Wind Brief at 16, citing Exh. DPU-CW-3-3). Finally, Cape Wind asserts that the reliability benefits of its offshore wind facility will flow directly to National Grid's ratepayers and are superior to those offered by other renewable energy resources because the facility: (1) is not located in a remote area behind transmission constraints like many land-based wind resources; and (2) has a high projected output during winter peak hours, unlike solar resources (Cape Wind Brief at 16, citing Exhs. DPU-CW-1-8; DPU-CW-3-3). Cape Wind concludes that, here, no party has successfully challenged the reliability attributes and relative advantages of its facility in this proceeding (Cape Wind Brief at 16).

iii. Attorney General

The Attorney General states that the Cape Wind facility will enhance reliability in Massachusetts because it will: (1) inject power into the transmission grid in an area in which there are few other direct connections to sources of supply; (2) provide additional generation in SEMA, which may prevent the dispatch of high-cost generation; and (3) provide a large, new supply resource fueled by wind instead of natural gas (Attorney General Brief at 32).

iv. Alliance to Protect Nantucket Sound

According to Alliance, National Grid and Cape Wind have failed to support their claim that the Cape Wind facility will have a higher capacity factor at peak than land-based wind (Alliance Brief at 42). Alliance further asserts that they should have provided quantitative evidence to that effect so that such evidence could be weighed against the costs of the Cape Wind facility (Alliance Brief at 42). In addition, Alliance claims that there is no evidence in the record that the Cape Wind facility would have a higher capacity factor than a portfolio of lower priced land-based wind and landfill gas resources, and Cape Wind's own evidence shows that offshore wind only exceeds the capacity factor of land-based wind by about five percent, in general (Alliance Brief at 42, citing Exh. NG-SFT-3).

Alliance contends that instead of a contracting with a single large facility like Cape Wind, National Grid should contract with multiple smaller generators to increase reliability because: (1) diversity of supply will make ratepayers less vulnerable to price spikes from outages, congestion, and other factors; and (2) wind power is an intermittent resource and a combination of smaller renewable projects would have a higher combined capacity factor than a single, large wind facility (Alliance Brief at 38). Alliance claims that National Grid can find a sufficient amount of other renewable energy resources in New England, New York, and Canada that will reliably serve load at a significantly lower cost than the Cape Wind facility (Alliance Brief at 41). Alliance argues that the transmission bottlenecks alleged by other parties have already been addressed, are being addressed, or soon will be addressed in order to integrate land-based wind resources into the New England grid (Alliance Brief at 41).

v. CLF et al.

CLF et al. claim that there is substantial evidence to compel a determination that the Cape Wind facility will enhance reliability in the Commonwealth (CLF et al. Brief at 14). CLF et al. argue that any facility that generates electricity at time when there is stress on the system will increase the reliability of power supply (CLF et al. Brief at 14, citing Exh. CLF/CPN-PC at 24). CLF et al. contend that with a nameplate capacity of 468 MW and an average capacity factor of 37 percent, the Cape Wind facility will provide enhanced reliability by supplying substantial power to the electric grid, including at times of peak demand (CLF et al. Brief at 14, citing Exhs. CW-DJD-1, at 15; DPU-CW-1-8). CLF et al. assert that the Cape Wind facility will provide important locational benefits that will promote system reliability because it will: (1) supply substantial power to the electric grid, even at times of peak demand; (2) be located adjacent to major load centers in SEMA; and (3) tap into an infinitely replenishable renewable energy resource and reduce reliance on fossil fuels, which are subject to volatile pricing and supply disruptions (CLF et al. Brief at 14, citing Tr. 12, at 2385; Exhs. DPU-CW-3-3; CLF/CPN-PC at 16, 24).

vi. Department of Energy Resources

DOER asserts that the Cape Wind facility will enhance the reliability of the bulk power system because it will generate electricity during times of system stress (DOER Brief at 27-28). DOER estimates that if the Cape Wind facility is constructed at its proposed maximum 468 MW size, based on the average capacity factor assumed for offshore wind (i.e., 37 percent), it will contribute 173 MW of capacity value and 1.5 million MWh of energy to the regional electric system (DOER Brief at 28, citing Exh. DPU-NG-5-4(d)). DOER argues

that the facility's location adjacent to major customer load centers in southern New England is also an advantage in terms of promoting system reliability (DOER Brief at 28).

DOER claims that the Cape Wind facility will enhance reliability to a greater degree than alternatives because of its offshore location and proximity to load (DOER Brief at 28). DOER alleges that the Cape Wind facility can contribute more to system reliability than a similar amount of land-based wind because the wind offshore is more constant and predictable, and blows more during peak hours than onshore wind (DOER Brief at 28, citing Exhs. DPU-NG-5-4(d); NG-SFT-3). DOER contends that renewable energy resources in remote locations will incur larger energy losses than facilities that are located near load and that they are also, in general, at a much greater risk of encountering transmission capacity limitations, which makes them a less reliable resource than the Cape Wind facility (DOER Brief at 28).

c. Analysis and Findings

Several parties note that the Cape Wind facility will enhance the reliability of electric service by adding a generation resource that is not affected by the price or the availability of fossil fuels. While this characteristic is extremely important, it is shared by virtually all renewable energy resources. Accordingly, the Department will focus its evaluation primarily on the specific location, size, and projected capacity factor of the Cape Wind facility to determine whether it will provide enhanced reliability in the Commonwealth.

A primary advantage of the Cape Wind facility is that it will be located very near a customer load center and thus contribute more to system reliability than a resource that is located farther away (Exhs. DPU-CW-3-3; NG-SFT at 102-103; Tr. 1, at 253; Tr. 3, at 692,

705-706). When a generation resource is located near a customer load center it will:

(1) reduce transmission line losses, which also serves to improve system voltage, thereby reduced the amount of power needed from elsewhere; and (2) not be subject to any transmission constraints, which better positions the electric system to respond to any contingencies in the availability of power supply, thereby reducing the probability of surges, brown-outs, and black-outs (Exhs. DPU-CW-3-3; DPU-CW-3-1(d), Att. at 19). Today, electricity customers on Cape Cod receive most of their power from: (1) the Canal generating station, located in Sandwich, Massachusetts; and (2) two 345 kV transmission lines that cross the Cape Cod Canal from the lower SEMA area (Exh. DPU-CW-3-1(c) (Att. at 9)).

See also Cape Wind Associates, LLC, 15 DOMSB 1, 29-30 (2005). The Cape Wind facility's injection of power into the middle of this load center at the Barnstable switching station will: (1) balance Cape Cod's reliance on these other two sources; and (2) provide an important redundant supply of power (i.e., one that allows for continuous power flow through the system), even under emergency conditions. 15 DOMSB at 40. Accordingly, we find that the Cape Wind facility's location near a customer load center will substantially enhance system reliability.

Second, as an intermittent resource, the Cape Wind facility's contribution to enhanced reliability depends on its size and how much electricity it typically injects into the system. The Cape Wind facility has a proposed maximum nameplate capacity of 468 MW and a projected average capacity factor of 37.1 percent, which will result in a large amount of electricity being injected directly into the electric system (Exhs. NG-MNM at 10-11; DPU-NG-5-4;

CW-DJD-1, at 15). While we acknowledge that the facility could be constructed as something smaller than its maximum nameplate capacity, we find that even under conservative assumptions, it is likely to produce a substantial amount of electricity for a renewable energy resource.¹⁵⁹ In addition, because of its location and likely wind speeds in the area, the Cape Wind facility's average capacity factors mean that it is likely to produce electricity year-round, and especially during both winter and summer system peaks (Exhs. NG-SFT-3; CW-DJD-1, at 15-16; Tr. 3, at 693-694, 721). We find that the Cape Wind facility's average capacity factor further serves to enhance reliability.

As Alliance observes, in some circumstances, system reliability may be better served by a portfolio of small generators than by a few large generators. With regard to the Cape Wind facility, however, any perceived disadvantage of executing a long-term contract with one facility in a limited geographic area is negated to a substantial extent by its proposed inclusion of 130 independently operating wind turbines over a 25 square mile area with rich wind conditions, which means that the facility will perform more like a collection of small generators, albeit intermittent ones, than a single large generator. In addition, Alliance contends that contracting with multiple smaller generators is preferable because diversity of supply will make ratepayers less vulnerable to price spikes from outages, congestion, and other

¹⁵⁹ As described in Section III.C, above, PPA-1 obligates National Grid to purchase up to 234 MW from the Cape Wind facility. This 234 MW obligation could range in percentage terms from 50 percent of a 468 MW facility to 80 percent of a 292.5 MW facility (PPA-1, § 4.10; Exh. NG-MNM at 4 (Supp.); Tr. 3, at 498-500). If the facility ends up being built at less than 292.5 MW, National Grid's obligation will be less than 234 MW but will remain at 80 percent of the output (PPA-1, § 4.10; Exh. NG-MNM at 4 (Supp.); Tr. 3, at 498-500).

factors. As described in Section II, above, the facility's design includes two 115 kV transmission lines, and AWS Truewind estimates that a maximum of 409 MW will be delivered from the facility to the switching station (Tr. 3, at 610). In addition, Cape Wind has provided detailed information about the quality of the equipment and the experience of the manufacturer, operator, and maintenance provider for the proposed facility (Exh. CW-DJD-1, at 15; RR-DPU-CW-3 (Att.); RR-DPU-CW-4).¹⁶⁰ Based on the above, Cape Wind's robust design, and AWS Truewind's conservative assumptions about the facility's potential to deliver power, we find it unlikely that there will be frequent outages at the facility. In addition, congestion issues are highly unlikely with a facility located near a customer load center (Exhs. CW-DJD-1, at 15-16; NG-SFT at 95-100). Finally, Alliance's claim that National Grid has failed to disprove the enhanced reliability associated with landfill gas and land-based wind is inapposite. The Company is required to meet its burden to provide sufficient evidence with regard to the benefits of PPA-1, which is not the same as disproving the existence of any benefits associated with other resources.

Accordingly, based on all of the considerations above, we find that the Cape Wind facility's specific location, size, and projected capacity factor will enhance reliability in the Commonwealth. In addition, regardless of whether we consider the output associated with the maximum nameplate capacity of 468 MW or the 234 MW of output associated with PPA-1, we

¹⁶⁰ Cape Wind notes that Siemens, its manufacturer, operator, and maintenance provider for the facility has over 550 MW of the same type of offshore wind turbines installed and operating worldwide, with purchase orders in hand for another 700 turbines (Exh. CW-DJD-1, at 15).

find that the Cape Wind facility's potential to enhance reliability is an important qualitative benefit of PPA-1.

7. Moderation of System Peak Load Requirements

a. Introduction

Pursuant to Section 83, a petitioner must demonstrate that the renewable energy generating source will “contribute to moderating system peak load requirements” in order to obtain Department approval. See also 220 C.M.R. § 17.05(1)(c)(ii). In addition to being a required finding pursuant to Section 83, like other benefits described in Section VII, D., above, moderation of system peak load is a non-quantifiable but still important benefit of a long-term contract with a renewable energy resource.

As an initial matter, we note that Section 83 refers to a specific renewable energy resource's ability to moderate system peak load and our primary task is to determine the costs and benefits of PPA-1. While the parties have referred to the Cape Wind facility's ability to moderate system peak load in their arguments, we will consider such arguments and then make a determination about the implications for PPA-1.

b. Positions of the Parties

i. National Grid

National Grid asserts that there is substantial evidence that the Cape Wind facility will contribute to moderating system peak load requirements (National Grid Brief at 20). The Company claims that the capacity factor of offshore wind is likely to be superior to both land-based wind and solar generation, and to have greater coincidence with both summer and winter system peaks in the region than either land-based wind or solar (National Grid Brief at 20,

citing Exhs. CW-DJD-1, at 16; DPU-NG-5-4). According to National Grid, offshore wind will moderate system peak load to a greater extent than land-based wind during the summer, and to a greater extent than solar during the winter (National Grid Brief at 20,

citing Exhs. NG-SFT at 106-107; CLF/CPN-PC at 24; CW-DJD-1, at 16; AG-CW-3-7).

National Grid argues that offshore wind's peak production period is during the winter and, based on six years of meteorological data, the Cape Wind facility would have produced approximately 209 MW of capacity, which reflects a 45 percent capacity factor, during times of winter peaks in New England (National Grid Brief at 20, citing Exh. CW-DJD-1, at 17).

National Grid contends that the Cape Wind facility will moderate overall system peak load because a comparison of its wind data to ISO-NE's top ten electricity demand hours, which were all on summer days, shows that the Cape Wind facility would have contributed an average of approximately 321 MW of capacity, which is equal to a 76 percent of its maximum capacity factor (National Grid Brief at 20, citing Exh. CW-DJD-7, at 3, 5).

In addition, the Company claims that the Cape Wind facility will moderate system peak load because of its proposed location south of the north-south transmission interface, which constrains the delivery of electricity, particularly during peak times (National Grid Brief at 20-21, citing Exhs. NG-MNM at 10-11; DPU-NG-5-4; CW-DJD-1, at 15, 19-20). National Grid argues that most land-based wind resources are expected to be located north of this interface, which would require more transmission to be permitted and constructed (National Grid Brief at 21, citing Exh. CW-DJD-1, at 20)

ii. Cape Wind

Cape Wind argues that the Cape Wind facility has a variety of important features that will help moderate system peak load (Cape Wind Brief at 16-17). First, Cape Wind claims that the capacity factor of offshore wind facilities is likely to be superior, with greater coincidence to both summer and winter system peaks in the region, than either land-based wind or solar generation (Cape Wind Brief at 17, citing Exh. CW-DJD-1, at 16). Cape Wind contends that the expected on-peak capacity factor for offshore wind projects is between 35 and 40 percent, or roughly three to four times greater than the expected on-peak capacity factor of land-based wind of approximately ten to 13 percent (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 16; CW-DJD-4; CW-DJD-6). In addition, Cape Wind argues that because the daily production of offshore wind power is far more coincident with peak hours than land-based wind, the Cape Wind facility will be more effective than land-based wind in meeting summer peak load (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 16; NG-APNS-2-1 (Att.)).¹⁶¹

Second, Cape Wind asserts that the extensive wind data from its proposed facility location shows that it would have made an exceptional contribution to moderating system peak load, particularly in comparison to other renewable energy options (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 16; CW-DJD-7; AG-CW-3-7). Based on its data, Cape Wind estimates that: (1) its facility capacity factor would have averaged 76 percent during ISO-NE's

¹⁶¹ Cape Wind notes that, unlike offshore wind, land-based wind's production ramps up at about 8:00 p.m. and ramps down at about 6:00 a.m. (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 16; NG-APNS-2-1 (Att.)).

top ten historic peak hours, all of which occurred during summer months; (2) had the facility been in operation during the summer peak periods of 2004, 2005, and 2006, its capacity factor would have ranged from 24 to 38 percent;¹⁶² and (3) its facility will operate with a year-round average capacity factor of at least 37.1 percent (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 16; CW-DJD-7; AG-CW-3-7; CW-RBS-9, at 49 n.62; CW-RBS-15). Given the excellent wind conditions in Nantucket Sound, Cape Wind argues that its facility will possess crucial advantages in moderating system peak load in comparison to other renewable energy resources that are eligible under Section 83 (Cape Wind Brief at 17, citing Exhs. CW-DJD-1, at 17-18; DPU-CW-1-8).

Cape Wind argues that most renewable energy resources outside of the region or in northern New England must rely on: (1) frequently constrained transmission systems; or (2) transmission system expansions, which will be speculative and costly undertakings, even if successful (Cape Wind Brief at 18, citing Exh. CW-DJD-1, at 19-20). In contrast, Cape Wind claims that the facility's unique location near the largest load center in New England avoids those costs and obviates the need for costly transmission investments (Cape Wind Brief at 18, citing Exh. CW-DJD-1, at 20). In addition, Cape Wind asserts that its facility's transmission costs are fully internalized in the pricing of PPA-1 (Cape Wind Brief at 18-19, citing Exh. CW-DJD-1, at 20).

¹⁶² Cape Wind notes that the average capacity factor for land-based wind during summer peak periods would range from 15 to 22 percent (Cape Wind Brief at 17, citing Exhs. CW-RBS-9, at 49; CW-RBS-15).

Given the advantages of this type of facility as well as its location, Cape Wind concludes that its facility will moderate system peak load to a greater extent than other renewable energy resources that are eligible under Section 83 (Cape Wind Brief at 19, citing Exh. CW-DJD-1, at 20-21).

iii. Attorney General

According to the Attorney General, the Cape Wind facility will moderate system peak load given that it is expected to generate more output than a land-based wind resource during peak times, and especially summer peak hours (Attorney General Brief at 32, citing Exhs. NG-SFT at 104-111; NG-MNM at 10; CW-DJD-1, at 16-21; CW-DJD-7).¹⁶³

iv. Alliance to Protect Nantucket Sound

According to Alliance, National Grid and Cape Wind have failed to support their claims that the Cape Wind facility will have a higher capacity factor at peak than land-based wind (Alliance Brief at 42). Alliance further asserts that National Grid and Cape Wind should have provided quantitative evidence to that effect so that such evidence could be weighed against the costs of the Cape Wind facility (Alliance Brief at 42). In addition, Alliance claims that there is no evidence in the record that the Cape Wind facility would have a higher capacity factor than a portfolio of lower priced land-based wind and landfill gas resources, and Alliance's own evidence shows that offshore wind exceeds the capacity factor of land-based wind only by about five percent (Alliance Brief at 42, citing Exh. NG-SFT-3).

¹⁶³ While the Attorney General compared offshore wind to offshore wind in her brief, the exhibits she cited compare offshore wind to land-based wind.

v. CLF et al.

According to CLF et al., the Cape Wind facility will moderate system peak load requirements by decreasing the amount of power to be supplied by conventional generation at high load hours (CLF et al. Brief at 15, citing Exh. CLF/CPN-PC at 25). CLF et al. contend that the extensive wind data from Nantucket Sound confirms that the Cape Wind facility will operate at high capacity and supply substantial power during times of system peak demand (CLF et al. Brief at 15, citing Exhs. CW-DJD-1, at 15; DPU-CW-1-8). CLF et al. assert that, while it is not necessary to a finding under Section 83, the Cape Wind facility will moderate system peak load in a manner superior to both land-based wind on a year-round basis and solar resources during the winter (CLF et al. Brief at 15, citing Exhs. CLF/CPN-PC at 24; CW-DJD-1, at 17-18).

vi. Department of Energy Resources

According to DOER, an additional benefit of Cape Wind is that its operation will coincide during many hours of the year with system peak loads and thereby modify peak load requirements (DOER Brief at 28, citing Exh. NG-SFT at 105-111). DOER contends that offshore wind facilities tend to generate more electricity during peak hours of the day than land-based wind facilities (DOER Brief at 28, citing Exh. NG-SFT at 106).

DOER asserts that the Cape Wind facility will moderate system peak load because, based on the wind data from its proposed location, the facility's capacity factor would have averaged 76 percent during ISO-NE's top ten historic peak hours and reduced hourly and peak loads by providing approximately 321 MW of capacity during each event (see DOER Brief at 28-29, citing Exh. NG-SFT at 110-111). DOER also claims that because the Cape Wind

facility has been in development for years, it has accumulated six years of wind data from its intended location, which will provide system planners at ISO-NE with a more reliable basis for estimating the timing and degree of contribution of the Cape Wind facility to moderating system peaks, as compared to projects that are less mature or more speculative (DOER Brief at 29, citing Exh. DPU-CW-3-4).

c. Analysis and Findings

To determine whether a renewable energy resource will moderate system peak load requirements, we must consider a facility's output and capacity factor at the electric system's peak. Here, a number of parties have: (1) observed that the output of offshore wind is more likely to be coincident with system peak load than is that of other renewable energy resources; and (2) compared the Cape Wind facility's projected output to system peak load.

Regarding offshore wind generally, National Grid, Cape Wind, the Attorney General, CLF et al., and DOER agree that the output and capacity factor of an offshore wind facility is likely to be highly coincident with system peak load, especially in comparison to land-based wind and solar resources. In conjunction with its earlier arguments about enhanced reliability, Alliance claims that National Grid has failed to disprove that a combination of landfill gas and land-based wind would better moderate system peak load than offshore wind. However, as we noted above, the Company is required to meet its burden and provide sufficient evidence with regard to the benefits of PPA-1, which is not the same as disproving the existence of any benefits associated with other resources.

With regard to the Cape Wind facility in particular, National Grid, Cape Wind, CLF et al. and DOER claim that, based on a comparison of the wind data collected in

Nantucket Sound with ISO-NE's top ten historic peak hours, the Cape Wind facility is extremely likely to moderate system peak load requirements (Exhs. CW-DJD-1, at 17; CW-DJD-7, at 5; NG-SFT at 110). National Grid and Cape Wind also argue that the facility's proximity to a customer load center is another factor that makes it superior to facilities with transmission constraints (National Grid Brief at 20-21; Cape Wind Brief at 18). Alliance argues that National Grid and Cape Wind have failed to support their claims that the Cape Wind facility will have a higher capacity factor at peak than land-based wind, and National Grid and Cape Wind should have provided quantitative evidence (Alliance Brief at 42). We find that the evidence put forth by National Grid and other parties regarding the Cape Wind facility's projected capacity factor relative to land-based wind is extensive and credible and, based on this evidence, we conclude that the facility will contribute to moderating system peak load requirements (Exhs. CW-DJD-1, at 15-21; CW-DJD-7, at 5; NG-SFT at 110; NG-SFT at 104-111; NG-MNM at 10).

For all of these reasons, we conclude that, as an offshore wind facility located near load with a capacity factor that is likely to be coincident with system peak, the Cape Wind facility will contribute to moderating system peak load requirements. In addition, regardless of whether we consider the output associated with the maximum nameplate capacity of 468 MW or the 234 MW of output associated with PPA-1, we find that the potential of the Cape Wind facility to moderate system peak load is an important qualitative benefit of PPA-1.

8. Employment Benefits

a. Introduction

Pursuant to Section 83, the Department must determine whether the renewable energy resource to be used by a developer under a long-term contract will create additional employment, where feasible. See also 220 C.M.R. § 17.05(1)(c)(4).¹⁶⁴

b. Positions of the Parties

i. National Grid

National Grid asserts that the Department's approval of PPA-1 will provide jobs to the local economy (Exh. NG-SFT at 122). National Grid points to studies by the National Renewable Energy Laboratory, the University of Massachusetts, and the DOE, and claims that these studies demonstrate that a growing wind power industry is likely to create additional employment in the United States and the Commonwealth (Exh. NG-SFT at 122-125).

ii. Cape Wind

Cape Wind contends that the facility will create jobs during its construction and operational phases and will lead to increased economic activity (Cape Wind Brief at 42-44; Exh. CW-DJD at 25-27). Cape Wind retained Global Insight, Inc. ("Global Insight") to study the job creation and economic impacts likely to result from the construction and operation of

¹⁶⁴ In D.P.U. 10-58 and the accompanying emergency regulations, the Department suspended the applicability of the geographic limitation contained in Section 83 that such additional employment be created "within the Commonwealth." Order Adopting Emergency Regulations on Long-Term Contracts for Renewable Energy, D.P.U. 10-58 (2010); Order Adopting Final Regulations on Long-Term Contracts for Renewable Energy, D.P.U. 10-58-A (2010) (see Section VIX, below, for further discussion regarding the Department's actions in response to the lawsuit raising a constitutional challenge to Section 83).

the facility (Exh. CW-DJD-9). During the construction phase, the direct effect of the facility is estimated to create 391 temporary, full-time jobs, and the indirect and induced effects are estimated to add another 206 to 622 temporary, full-time jobs (Exh. CW-DJD-9, at 13).¹⁶⁵ Assuming that the indirect and induced effects will be somewhere in the middle of the estimated range provided by Global Insight, the construction phase will add approximately 414 jobs, for a total of 805 full-time jobs (RR-DPU-CW-7).¹⁶⁶ During the operational phase, the direct effect of the facility is estimated to create 50 permanent, full-time jobs, and the indirect and induced effects are estimated to add another 104 permanent, full-time jobs (Exh. CW-DJD-9, at 14). Thus, if constructed at its 468 MW full build-out size, the facility is estimated to create approximately 805 full-time jobs during the construction phase of two years and three months, and approximately 154 full-time positions during the 15-year operational phase (RR-DPU-CW-7). This is equivalent to an average of 263 jobs per year, for the term of PPA-1.

Cape Wind contends that the price suppression effect from operation of the Cape Wind facility will also lead to increased jobs, in addition to the jobs created from the construction

¹⁶⁵ The Global Insight study defines: (1) the direct economic impacts as hiring of workers in the manufacturing and assembly phase and the construction and installation phase and purchases of non-labor goods; (2) the indirect effects as the additional demand for goods and services from the industries that sell goods and service directly to the project; and (3) induced effects as the increases in employment and income generated by the expenditure of disposable income of the newly hired manufacturing and assembly phase and the construction and installation workers (Exh. CW-DJD-9, at 11).

¹⁶⁶ In other words, 391 jobs from the direct effect plus approximately 414 jobs from the indirect and induced effects equals a total of approximately 805 temporary, full-time jobs.

and operation of the facility (Cape Wind Reply Brief at 14; Exh. CW-DJD-9, at 15-16). The Global Insight study used the IMPLAN I/O model to estimate the number of jobs created as a result of the estimated reduction in wholesale electricity prices (Exh. CW-DJD-9, at 16).¹⁶⁷

Global Insight estimated that savings from electric wholesale power costs from the Cape Wind facility would create approximately 142 to 215 jobs per year (Exh. CW-DJD-9, at 16).¹⁶⁸

iii. Attorney General

The Attorney General cautions that because the construction, operation, and maintenance contracts have not been awarded, the job creation estimates presented in this proceeding are uncertain (Attorney General Brief at 32, citing Exhs. NG-SFT at 125; CW-DJD at 25-27; Tr. 3, at 505-512).

iv. Alliance to Protect Nantucket Sound

Alliance does not dispute Cape Wind's contention that additional employment will result from the construction and operation of the facility. Alliance asserts, however, that if ratepayers bear above-market costs for electricity under PPA-1, those higher electric prices will result in lost jobs (Alliance Brief at 43-44; Exh. APNS-JAL at 135).¹⁶⁹

¹⁶⁷ To make this calculation, Global Insight relied upon an estimate of wholesale price suppression from the Cape Wind facility of \$25 million per year, based on a 2002 study prepared by LaCapra Associates (Exh. CW-DJD-9, at 15).

¹⁶⁸ Dividing these job results by the estimated \$25 million price suppression effects implies that the Global Insight study used job multipliers of 5.7 to 8.6 jobs per million dollars saved. Global Insight's range, which was developed in 2003, is comparable to the job multiplier of seven jobs per million dollars spent, as used by Alliance in its 2010 employment analysis.

¹⁶⁹ As noted above in Section VII.D.3, Alliance contends that any reduction in wholesale power costs resulting from price suppression is a transfer payment and, therefore, not a

Alliance also used the IMPLAN I/O model to estimate the economic impacts of higher wholesale electricity prices, reflecting the project's above-market costs (Exh. NG-APNS-1-16(c); see also Exh. APNS-JAL at 135 n.67). Based on its analysis, Alliance concludes that each \$1 million increase in electric costs above-market prices will result in the loss of about seven jobs (Exh. APNS-JAL at 135). Alliance claims that adverse economic impacts from above-market costs will "far outstrip the job creation impacts of operating the facility" (Exh. APNS-JAL at 47).

v. CLF et al.

CLF et al. contends that the Cape Wind project is anticipated to create a significant number of jobs in connection with construction, operation, and maintenance (CLF et al. Brief at 15, citing RR-DPU-CW-7). In addition, CLF et al. asserts that Cape Wind will help the Northeast realize the considerable potential of offshore renewable energy (CLF et al. Brief at 16). CLF et al. claims that the Massachusetts Wind Technology Testing Center under construction in Charlestown, Massachusetts is an early indicator of Cape Wind's indirect impact on job creation (CLF et al. Brief at 16, citing Exh. NG-SFT at 35-36).

vi. Department of Energy Resources

DOER asserts that the facility will create jobs through direct employment, lower energy prices in New England, and by positioning the region to become a center for growth in the offshore wind industry (DOER Brief at 34-37). DOER argues that the facility will create

true benefit to ratepayers (Exh. APNS-JAL at 46). Alliance also contends that the price suppression effect should not be included as an additional factor in estimating job impacts (Tr. 8, at 1350-1351).

600 to 1,000 jobs per year during construction and more than 150 jobs per year during operation, assuming a 468 MW project, and that no other party has challenged this estimate (DOER Brief at 34, citing Exh. CW-DJD-9; Tr. 3, at 660-661). DOER contends that this estimate is supported by other, more general studies of the ability of wind energy projects to create jobs (DOER Brief at 34, citing Exh. NG-SFT at 122-26). DOER contends that the Cape Wind facility will also reduce market electricity rates through the price suppression effect and will lower energy costs, thereby allowing customers, including businesses, to spend or invest more money, in turn creating additional jobs (DOER Brief at 34-35). DOER maintains that Alliance's conclusion that the Cape Wind facility will raise electricity prices and reduce employment ignores the price suppression effect (DOER Brief at 35, citing Exhs. APNS-JAL at 135-136; CW-RBS-9, at 73-74; Tr. 1, at 295-296; Tr. 12, at 2,410-2,411). Finally, DOER claims that approval of PPA-1 will result in significant employment and new investment by establishing a hub for the offshore wind industry in the region (DOER Brief at 35-37).

c. Analysis and Findings

There is no dispute that the construction and operational phases of the facility will result in additional employment. The construction phase will create manufacturing, assembly, and installation jobs and will last approximately two years and three months (Exhs. CW-DJD-9, at 3-4; DPU-CW-7-34). The operational phase will consist of ongoing maintenance activities and will last for at least 15 years, the term of PPA-1. Cape Wind estimates that construction and operation of the facility will result in an average of 263 jobs per year, for the term of

PPA-1. Cape Wind's estimates of employment created from the construction and operation of the facility have not been challenged in this proceeding and we find them to be credible.

The parties make opposing arguments regarding the impact on employment of changes in electricity prices resulting from the operation of the Cape Wind facility.¹⁷⁰ Alliance argues that the above-market costs of the Cape Wind contract will result in net job losses, but does not include the effects of wholesale electricity price suppression, which would lead to increased jobs (see Alliance Brief at 43-44; Exh. APNS-JAL at 135-136). In contrast, Cape Wind argues that wholesale electricity price suppression will have positive impacts on employment (Exh. CW-DJD-1, at 25-26).

Both Alliance and Cape Wind are partly correct. According to economic theory, increased electricity costs will lead to a reduction in employment and reduced electricity costs will lead to increased employment. Thus, the total effect of the Cape Wind facility on employment has three components: (1) the increase in employment as a result of construction and operation of the facility; (2) the increase in employment as a result of suppressed wholesale electricity prices; and (3) the reduction in employment as a result of the above-market costs that are passed on to National Grid distribution customers.

¹⁷⁰ See Section VII.D.3, above, for our discussion and findings regarding the price suppression effects of the Cape Wind project. All parties agree that there will be a price suppression effect and it will result in lower electric costs in Massachusetts and New England. However, there are conflicting views about the magnitude of the price suppression effect, about whether it should be considered a benefit in determining cost-effectiveness, and about whether it should be factored into estimates of job creation (Exh. CW-RBS-R at 10; Tr. 12, at 2411; Tr. 8, at 1706).

Cape Wind included all three of these components in an estimate of the total impact of the facility on employment (RR-DPU-CW-7). In particular, Cape Wind presented the employment impacts from construction and operation of the facility, and compared them with the net change in employment due to both the price suppression effect of the facility and its above-market costs (RR-DPU-CW-7).¹⁷¹ According to Cape Wind, the net effect of price suppression and above-market costs will be to create an average of 364 jobs per year, for the term of PPA-1 (RR-DPU-CW-7). When combined with the estimated job impacts from construction and operation, the facility is estimated to create an average of 566 jobs per year, for the term of PPA-1 (RR-DPU-CW-7).

There is an inconsistency, however, in Cape Wind's approach that must be addressed. Cape Wind's analysis includes the price suppression effect from operation of the full 468 MW facility, and similarly includes the number of jobs created by the construction and operation of the full facility. In contrast, the analysis calculates the above market costs and their effect on reducing employment based on National Grid's 234 MW entitlement of the facility's output. In order to properly represent the employment impacts of PPA-1, the analysis must evaluate the impacts from all three factors – construction and operation, price suppression, and above-market costs – in a consistent manner. The Department, therefore, modifies the number of jobs produced by the Cape Wind analysis to include only those that would be associated with the Company's 234 MW entitlement to the facility. For jobs associated with construction

¹⁷¹ For this purpose, Cape Wind applied Alliance's jobs multiplier of seven jobs per million dollars of change in electricity costs (RR-DPU-CW-7).

and operations, we conservatively reduce by one half the number of such jobs associated with the 468 MW facility. For employment impacts related to price suppression, we calculate the impact based on the price suppression that results from 234 MW of the facility's output. Using these assumptions and the above-market costs, our analysis indicates that the total employment effect of PPA-1 will be to create an average of 162 jobs per year, during its 15-year term. We find this to be the most appropriate number to use in considering employment benefits from PPA-1.

We are cognizant of the fact that all of the employment estimates contain uncertainties, and the actual effects could be different from the impacts estimated above. However, the estimate of the increased employment as a result of construction and operation of the facility was not disputed. Such construction- and operations-related employment is far less uncertain than the estimates of employment impacts from price suppression and above-market costs.

Further, Cape Wind's analysis accounts for job effects only through 2027, even though it is likely that there will be additional employment from the continued operation of the facility after that date. As we have noted, the PPA-1 term of 15 years leaves an additional ten years of useful life for the facility. This additional ten-year period is likely to result in additional employment impacts resulting from operation, maintenance, and ultimately decommissioning. Based on these results, as well as the considerations discussed above, the Department finds that PPA-1 will create additional employment.

E. Cost-Effectiveness of PPA-1: Summary and Conclusion

1. Introduction

Section 83 and the Department's regulations require that, in order to approve PPA-1, we must determine that it is a cost-effective mechanism for procuring renewable energy on a long-term basis, based on its potential costs and benefits.

The Department has already established likely ranges for the contract costs, market value, and the price suppression benefits of PPA-1, above. To conduct our cost-effectiveness analysis, we must: (1) deduct the market value and price suppression benefits from the contract costs to arrive at a range of likely net above-market costs of PPA-1; (2) identify and analyze the remaining unquantified benefits of PPA-1; and (3) compare the net above-market costs to all of the unquantified benefits in order to determine whether the total benefits of PPA-1 exceed its total costs.

2. Net Above-Market Contract Costs

Table 6, below, summarizes the likely range of values identified by the Department for the contract costs, market value benefits, and price suppression benefits associated with PPA-1 over its 15-year term. All values shown are in terms of cumulative present value dollars for the 15-year period of PPA-1, using the Company's seven percent discount rate.

Table 6: Determination of Net Above-Market Costs of PPA-1¹⁷²

	Low Case (in millions)	High Case (in millions)
Contract Costs	\$1,576	\$1,814
Market Value	\$1,032	\$1,032
Above-Market Costs	\$544	\$782
Price Suppression	\$87	\$124
Net Above-Market Costs	\$420	\$695

As shown in Table 6, the likely contract costs will range between roughly \$1.6 and \$1.8 billion. After deducting the likely market value of \$1.032 billion, the likely range of above-market costs will be between \$544 and \$782 million. Finally, after the likely price suppression benefits of \$87 to \$124 million are taken into account, we estimate that the likely range of net above-market contract is between \$420 and \$695 million.

It is important to note that, although these costs and benefits have been quantified into dollar figures, there is a great deal of uncertainty associated with many of the estimates upon which they rely. The range of net above-market costs presented in Table 6 reflects our expectation about the most likely range of possibilities.

¹⁷² Source: Sections VII.C, VII.D.2, and VII.D.3.

3. Unquantified Benefits of PPA-1
 - a. Price Adjustment Provisions

As discussed in Section VII.C, above, when we identified the range of net contract costs to include in our cost-effectiveness evaluation, we did not include any price reductions that may result from certain price adjustment provisions in PPA-1 such as the Financing-Adjusted Price, Cost-Adjusted Price, Wind Outperformance Adjustment, and the Most Favored Nation Clause.¹⁷³ While we deemed such provisions too uncertain to be included in the identified range of contract costs because they cannot be reliably quantified, these provisions provide important, risk-free benefits to ratepayers, which we will consider here.

As an initial matter, all of the price adjustment provisions of PPA-1 mentioned above, if triggered, will reduce contract prices and costs, thereby offering a benefit to National Grid ratepayers at no additional risk. The Financing-Adjusted Price and the Cost-Adjusted Price provisions establish a direct link between project costs and contract prices. Both of these provisions ensure that if Cape Wind is able to reduce its costs below expected levels by lowering its cost of debt or decreasing its construction and O&M expenses, then ratepayers will share in any benefits. The record indicates that, at least for the Financing-Adjusted Price provision, the dollar value of these benefits may be significant. In addition, because these

¹⁷³ The positions of the parties with respect to these provisions are discussed in Section VII.C, above.

provisions will split any benefits between Cape Wind and National Grid ratepayers, Cape Wind has a strong incentive to pursue such cost savings.

Similarly, the Wind Outperformance Adjustment provision establishes a direct link between the performance of the Cape Wind facility and the pricing of PPA-1. If the facility exceeds its projected capacity factor of 37.1 percent in any year, the price of the additional output will be reduced by 50 percent through a credit that will be applied in the subsequent year. In contrast, if the facility underperforms with regard to its projected capacity factor in any year, National Grid customers will not bear any additional costs for this underperformance. Because the 37.1 percent capacity factor represents an average of the facility's expected annual production, this provision is likely to be triggered in some years (see Cape Wind Brief at 34).¹⁷⁴ While it is difficult to project how the facility's capacity factor will vary over the term of PPA-1, we find the Wind Outperformance Adjustment provision offers another considerable benefit to National Grid ratepayers.

Finally, the Most Favored Nation Clause of PPA-1 will apply if Cape Wind: (1) enters into a new agreement with another counter-party for the purchase and sale of the remaining output of the facility that contains more favorable terms for the buyer (i.e., PPA-2 or a similar

¹⁷⁴ As an example of the benefit that ratepayers could realize from this provision, if the Cape Wind facility were to achieve a 39.3 percent capacity factor in a particular year, the value of the credit for the additional output in that year would be approximately \$10.4 million. This assumed 39.3 percent capacity factor is based upon assumptions for offshore wind used by the U.S. EIA. See U.S. Energy Information Administration, Annual Energy Outlook 2010, Report No. DOE/EIA-0383 (December 2009). In addition, for this calculation we assume (1) the Company purchases 234 MW of the facility's output, and (2) a levelized contract price of \$230.41.

contract); or (2) constructs additional offshore wind energy generating facilities in Massachusetts coastal waters or adjacent federal waters (i.e., within 50 miles of the Cape Wind facility) (PPA-1, § 4.1). If either of these events occur, National Grid will have opportunities to revise the terms of PPA-1 to align them with the new, more favorable terms, subject to the Department's review and approval of a new agreement or amendment (PPA-1, § 4.1(e)).

In conclusion, while we did not include any price reductions resulting from the Financing-Adjusted Price, Cost-Adjusted Price, Wind Outperformance Adjustment, and the Most Favored Nation Clause in our range of net above-market costs of PPA-1, we nonetheless find that these pricing adjustments provide significant benefits for National Grid ratepayers.

b. Option to Extend Provision

We also observe that the option to extend provision of PPA-1 presents potential benefits to National Grid's customers. First, the option to extend PPA-1 and all of its accompanying pricing adjustments will likely reduce National Grid's future GWSA compliance costs. It is reasonable to expect that the benefits of avoided GWSA compliance costs will increase over time as the GWSA emissions reduction targets become increasingly stringent and as compliance measures become increasingly expensive. Second, the option to extend PPA-1 provides hedge benefits to National Grid's ratepayers; over the course of time its prices and price adjustments will provide increasing value as a hedge against increasing electricity market prices. By the end of the initial term of PPA-1, it is possible that the market value will exceed contract costs, leading to below-market costs and direct savings to National Grid customers. Further, this option creates no risk to National Grid's customers at this time, because the

Company will only choose to exercise the option if the benefits are expected to outweigh the costs, based upon conditions that will exist at the end of the initial term of PPA-1. Therefore, the option to extend provision of PPA-1 provides a meaningful and potentially significant benefit for National Grid ratepayers.

c. Other Unquantified Benefits

In Section VII.D above, the Department discussed five additional unquantified benefits associated with PPA-1, which like the price adjustment provisions, represent very important and significant benefits to National Grid customers. These benefits are summarized below.

First, as discussed above in Section VII.D.5, we found that PPA-1 will assist National Grid's compliance with Massachusetts RPS requirements because it will provide a large amount of renewable generation to help fill the anticipated gap between the supply of and demand for renewable energy in New England. We find, therefore, that the ability of the Cape Wind facility to help meet the Commonwealth's RPS requirements should be considered a significant benefit of PPA-1.

In addition, as also discussed above in Section VII.D.5, we found that PPA-1 will assist National Grid in avoiding future GWSA compliance costs, by creating significant reductions in GHG emissions over the term of the contract. The GWSA emission reduction goals are very aggressive. While the precise targets and costs of achieving them remain uncertain, it is reasonable to anticipate that the emission reductions required by the GWSA will require significant investments across all sectors of society, especially the electric sector. Other sectors (transportation in particular) may reduce their emissions by increasing their use of

electricity, thereby putting additional pressure on the electric sector to meet its GWSA targets. Furthermore, offshore wind is expected to play an essential role in reducing the GHG emissions from the electricity sector, due to the aggressive goals of the GWSA and the various limitations on other low-carbon or no-carbon electricity generation resources. Therefore, the Department finds that Cape Wind's ability to assist National Grid in complying with GWSA requirements is another benefit of PPA-1.

Further, as discussed above in Sections VII.D.6 and VII.D.7, the Department found that PPA-1 is a long-term contract for a renewable energy resource that will have especially favorable characteristics with regard to size, location, fuel type (i.e., wind), and average capacity factor. Consequently, we found that Cape Wind will provide enhanced electric system reliability in the region, particularly given the facility's average capacity factor, its location near a customer load center in southern New England, and its non-reliance on fossil fuels. In addition, we found that Cape Wind will moderate electric system peak load in the region, particularly in light of the amount of renewable generation being purchased.

Finally, as discussed above in Section VII.D.8, we found that PPA-1 will lead to employment benefits in the region, particularly with regard to the employment created by the construction and operation of the Cape Wind facility. Our analysis indicates that the total employment effect of PPA-1 will be to create an average of 162 jobs per year, during its 15-year term.¹⁷⁵ Accordingly, we find that this employment impact is also a benefit of PPA-1.

¹⁷⁵ While the employment impact has been quantified in terms of number of jobs, it has not been quantified in terms of dollars.

4. Conclusion

Based on all of the considerations above, the Department finds that there are significant unquantified benefits associated with PPA-1 in terms of its: (1) pricing adjustment provisions; (2) extension option; (3) role in achieving compliance with Massachusetts RPS requirements; (4) role in avoiding future GWSA compliance costs; (5) enhancement of electric system reliability; (6) moderation of system peak load; and (7) employment benefits. When these benefits are compared with the likely range of net above-market costs of \$420 and \$695 million, we find that the unquantified benefits exceed even the high end of the likely range of above-market costs. Therefore, we find that the expected benefits of PPA-1 to National Grid customers exceed the expected costs to National Grid customers. Accordingly, pursuant to Section 83, the Department finds that PPA-1 is a cost-effective mechanism for procuring renewable energy on a long-term basis.

5. Benefits Beyond National Grid

We recognize that some benefits of PPA-1 will be enjoyed by others in addition to National Grid's 1.2 million electric customers and that the facility will have beneficial effects throughout Massachusetts and New England. Such benefits to the region include: (1) enhanced electric system reliability; (2) reduced peak demand; (3) price suppression effects; (4) assisting compliance with RPS targets; (5) assisting compliance with GWSA requirements for the Commonwealth; (6) reduced use of fossil fuels; (7) fuel diversity; (8) reduced environmental impacts from electricity generation; and (9) employment benefits. In other words, many of the benefits that will be enjoyed by National Grid customers may be

enjoyed by other electricity customers in the region as well. We find that Section 83 specifically anticipates that the benefits of entering into long-term contracts for renewable energy will extend beyond a single distribution company. Before we can approve a long-term contract for renewable energy, the statute explicitly requires us to consider such regional benefits as enhanced reliability, moderation of peak load, and additional employment. Nonetheless, our decision on the cost-effectiveness of PPA-1 rests on the costs and benefits only to National Grid customers. To the extent that there are additional benefits of PPA-1 outside of National Grid's service territory, these broader benefits merely serve to reinforce our cost-effectiveness finding above.

Several parties have made claims that approval of PPA-1 would be a positive signal regarding the opportunities of pursuing offshore wind projects. Although we recognize that there may be merit to claims that the Cape Wind facility may catalyze the offshore wind industry in the United States, our decision regarding cost-effectiveness is based, as we have said, on the costs and benefits of PPA-1 to National Grid and its customers. We recognize that National Grid and its customers may be beneficiaries of the growth of a new industry in Massachusetts, but we accord it little weight as compared to the other benefits, quantified and unquantified, that we have discussed. To the extent that the construction of the Cape Wind facility results in the development of additional offshore wind facilities, these benefits serve only to reinforce our cost-effectiveness finding.

VIII. PUBLIC INTEREST

A. Introduction

In Section VII, above, the Department found that PPA-1 will be cost-effective to National Grid's ratepayers over its term (i.e., that the potential benefits that the contract will provide to ratepayers exceed the potential costs). However, a Department finding that a PPA-1 is cost-effective does not necessarily mean that procuring such a contract is in the best interest of National Grid's ratepayers and, therefore, in the public interest.

The Department will investigate four specific issues relating to whether PPA-1 is in the public interest. First, we will consider whether it is appropriate for National Grid to procure renewable energy through PPA-1 given that there are other, lower cost alternatives available. To do this, we will consider the value of PPA-1 as compared to other Section 83-eligible resources. Second, we will consider whether the pricing terms in PPA-1 are reasonable, given the type of renewable resource being purchased. To this end, we will consider the price of PPA-1 as compared to the price and costs of other offshore wind projects in the United States and abroad. We will also weigh provisions in PPA-1 that provide benefit to National Grid's ratepayers in the form of insurance that the project's developer will not reap windfall profits. Third, we will consider whether National Grid is purchasing the appropriate amount of renewable power through PPA-1, particularly given that the contract will supply 3.5 percent of the Company's electric load. Fourth, we will consider whether the bill impacts of PPA-1 on National Grid ratepayers are acceptable in light of the benefits of PPA-1.

B. Comparison with Alternative Renewable Resources

1. Introduction

In this section, the Department evaluates whether PPA-1 is in the public interest by comparing its costs and benefits to those that could be realized through contracts with other Section 83-eligible renewable resources. This evaluation is particularly important in this case: (1) because the Company negotiated, executed, and submitted PPA-1 outside of a competitive solicitation process; and (2) due to the high price of PPA-1 relative to alternative Section 83 resources, as discussed below.

2. Positions of the Parties

a. National Grid

National Grid asserts that it analyzed all bids received in response to the Initial RFP and compared them to PPA-1 (National Grid Brief at 34). National Grid explains that in comparison to such bids, the Cape Wind facility was neither the highest nor the lowest cost project (National Grid Brief at 34).¹⁷⁶ According to National Grid, the costs associated with the Cape Wind facility were consistent with its understanding of the cost of offshore wind relative to other types of renewable energy resources (National Grid Brief at 35).¹⁷⁷

National Grid asserts that there is no other resource with a comparable set of attributes and that lower priced alternatives do not offer the same combination of benefits (Exh. NG-SFT

¹⁷⁶ According to National Grid, all solar resources were more expensive than the Cape Wind facility while all land-based wind and biomass resources were less expensive (National Grid Brief at 35).

¹⁷⁷ The reasonableness of the pricing of PPA-1 will be discussed in Section VIII.C, below.

at 116). National Grid points out that while there are many announced renewable energy projects, such as those planned in Maine, Rhode Island, Quebec, and eastern Canada, none of these projects, on their own or in combination, presents a set of benefits as impressive as those of the Cape Wind facility (Exh. NG-SFT at 117). The Company states that other Section 83-eligible resources cannot equal the Cape Wind facility's package of benefits and attributes in terms of: (1) its advanced status of project development and permitting; (2) its ability to enhance electric system reliability and moderate system peak loads; (3) its location in the heart of southern New England's load center; (4) its price, which includes all related transmission costs; (5) its jobs and other economic benefits; (6) its ability to help stimulate the development of a new renewable energy technology in the United States; and (7) its status as the only large-scale offshore wind project in the United States that is ready to begin construction, which means that its benefits will be available relatively soon (Exh. NG-SFT at 117; National Grid Brief at 25).

National Grid argues that the Cape Wind facility is also the only large-scale renewable energy project in the region that can make a material difference in a timely manner toward closing the future gap between the supply of and demand for renewable energy (National Grid Brief at 1, 25; Exh. NG-RAR at 5-6). National Grid asserts that PPA-1 represents a monumental step toward making large-scale renewable energy resources a reality and that such resources will not get built without long-term contracts (National Grid Brief at 1; Exh. NG-RAR at 6). National Grid claims that it is imperative to move away from the region's reliance on carbon-based generation by advancing projects such as Cape Wind, and

that Alliance overstates the contribution that existing and future biomass facilities will make to the supply of renewable energy resources (Exh. NG-RAR at 6; National Grid Reply Brief at 7). Further, National Grid argues that if PPA-1 is not approved, it will send a chilling message about the possibility of offshore wind development in the Commonwealth and the region (National Grid Brief at 25).

b. Cape Wind

Cape Wind maintains that, in comparison to its facility, no other renewable energy resource: (1) has a similar scale or scope; (2) has the same package of benefits; (3) is equally cost-effective; and (4) is of the same project maturity (Cape Wind Brief at 3-4). Cape Wind asserts that the facility has unique benefits because it will: (1) be the first commercial-scale offshore wind facility in the United States; (2) be the largest renewable energy facility in New England; (3) produce approximately 1,520,000 MWh of emissions-free electricity per year; (4) suppress wholesale electricity prices; (5) hedge against fluctuations in electricity prices; (6) contribute to fuel diversity; (7) reduce emissions of CO₂, NO_x, SO₂, and other pollutants, thereby improving air quality and public health; (8) contribute to mitigating climate change and associated impacts while also reducing future climate change-related compliance costs; (9) create jobs; (10) spur the development of a new industry and its associated benefits; (11) enhance electric system reliability; and (12) contribute power during peak-load conditions (Cape Wind Brief at 3-4; Cape Wind Reply Brief at 20). According to Cape Wind, Alliance inappropriately focuses on the costs of PPA-1 and ignores the Cape Wind facility's unique benefits (Cape Wind Reply Brief at 20).

c. Attorney General

The Attorney General asserts that the Cape Wind facility is attractive in comparison to other renewable energy resources because its size will help ensure that RPS goals are met in the future (Attorney General Brief at 33). According to the Attorney General, the benefits of the Cape Wind facility include: (1) wholesale energy price suppression; (2) readiness for construction; (3) close proximity to load centers; (4) large size; (5) low carbon emissions; (6) job creation; (7) ability to facilitate the development of an offshore wind industry; (8) fuel diversity; (9) electric system reliability; (10) moderation of system peak load; (11) mitigation of energy price volatility; (12) promotion of the Commonwealth's RPS goals; and (13) lowering of technology and project costs for future offshore wind facilities (Attorney General Brief at 32).

d. Alliance to Protect Nantucket Sound

Alliance argues that because the costs of PPA-1 exceed those of many other eligible Section 83 projects, in order to validate its choice National Grid needs to compare the costs and benefits of the Cape Wind facility to a group of other projects to determine whether: (1) its benefits exceed the benefits of other projects; and (2) such benefits are weighed against its excess costs (Alliance Reply Brief at 17). However, Alliance asserts that National Grid has failed to demonstrate that PPA-1 is better for ratepayers than other eligible Section 83 renewable energy resources (Alliance Brief at 6). In particular, Alliance asserts that National Grid has failed to show that PPA-1 is reasonably priced in comparison to other Section 83 eligible alternatives (Alliance Brief at 13, 17-18).

Alliance contends that National Grid received a number of bids from the Initial RFP that were less expensive than PPA-1 (Alliance Brief at 18). Further, Alliance argues that bids from the Initial RFP are not representative of all Section 83-eligible projects because the Initial RFP was limited to in-state resources (Alliance Brief at 18). Therefore, Alliance maintains that National Grid entered into a long-term contract for the output of an expensive project without considering lower priced resources (Alliance Brief at 10).

Alliance further contends that National Grid has not established the unique benefits of the Cape Wind facility and argues that the facility has a number of disadvantages that will subject ratepayers to risks and associated costs (Alliance Brief at 16-17). Alliance claims that the large size of the Cape Wind facility will subject ratepayers to supply risk and high costs, whereas contracts with multiple, geographically diverse smaller projects would increase reliability (Alliance Reply Brief at 17; Alliance Brief at 38, 41-43).¹⁷⁸

In addition, Alliance argues that the Cape Wind facility is far from ready to begin construction due to ongoing litigation and appeals, which are expected to last for years (Alliance Brief at 35). For that reason, and because there is currently no buyer for PPA-2, Alliance contends that the Cape Wind facility will be unable to secure project financing (Alliance Brief at 35).

¹⁷⁸ Specifically, Alliance claims that multiple contracts with smaller, geographically diverse projects would be better for ratepayers because: (1) it would result in a diversified set of resources, which would reduce ratepayers' vulnerability to price spikes; (2) there would be less intermittency and a higher capacity factor compared to the Cape Wind facility; and (3) there would be increased competition which would lead to lower costs (Alliance Brief at 38).

Alliance refutes the claim that rejection of PPA-1 will chill the development of offshore wind resources in the region as without basis (Alliance Reply Brief at 18). Alliance argues that the Department should not approve PPA-1 on the expectation that such approval will launch a new industry in the Commonwealth (Alliance Reply Brief at 20). Further, Alliance contends that the Department should not consider any of the price adjustment provisions as a rationale for approving PPA-1 because other Section 83 eligible resources did not have an opportunity to develop matching price adjustment provisions (Alliance Reply Brief at 20).

e. Department of Energy Resources

According to DOER, no other renewable energy resource that is likely to enter into commercial operation within the next ten years has benefits that are comparable to those of the Cape Wind facility (DOER Brief at 42). DOER argues that the benefits of the Cape Wind facility include its: (1) unmatched size; (2) relatively high capacity factor; (3) ability to contribute significantly to the projected gap in future renewable energy supply; (4) provision of a hedge against future fuel costs; (5) ability to contribute substantially to reducing CO₂ emissions and the cost of GWSA compliance; (6) proximity to load centers; (7) contribution to reliability; (8) coincidence with system peak; (9) moderation of peak load; (10) zero fuel costs; (11) price suppression impact; (12) unique potential to create new jobs and spur the development of an entire industry; and (13) lack of a requirement for additional transmission and the associated costs (DOER Brief at 43).

3. Analysis and Findings

a. Introduction

One way the Department evaluates whether PPA-1 is in the public interest is by comparing its potential costs and benefits to those that could be realized through contracts with other Section 83-eligible renewable resources. The Company negotiated, executed, and submitted PPA-1 outside of a competitive solicitation process (see Section VI.D, above). Therefore, the Department must first assess the extent to which National Grid appropriately identified and considered alternative Section 83-eligible resources in its decision to enter into PPA-1. We then compare the benefits and costs of PPA-1 to those that could be provided by other potential Section 83 contracts, given that there are other, lower cost alternatives available.

b. Identification and Consideration of Section 83 Resources

National Grid states that it relied on three sources of information to identify other resources with which it could enter into long-term contracts pursuant to Section 83: (1) the results of the Initial RFP, for which bids were limited to resources in Massachusetts and adjacent state and federal waters; (2) its analysis of the supply of and demand for renewable energy in the region; and (3) the supply procurement activities of the Company and its affiliates in New England and in New York, which have informed the Company of developments in the renewable energy industry (Tr. 5, at 1010-1011; Exh. NG-SFT at 56-60).

The Initial RFP did not identify all Section 83-eligible resources because it contained a geographic limitation that was later removed. Nonetheless, the responses to the Initial RFP

provided the Company with valuable information regarding the likely prices and other information regarding a large number of Section 83-eligible resources. In particular, the bids submitted in response to the Initial RFP provided the Company with detailed information on the expected price, location, in-service date, and amount of output for each project (Tr. 5, at 1010; Exh. AG-NG-1-13 (Att.) (Confidential)). As discussed below, the pricing information provided by the Initial RFP is useful for establishing a baseline for the costs of other potential Section 83 contracts.

In addition, National Grid's analysis of the supply of and demand for renewable energy in the region provided the Company with further information on renewable energy projects that were likely to be eligible for Section 83 contracts (Exh. AG-NG-1-2 (Confidential)). While the Company's analysis focused on announced resources in the ISO-NE interconnection queue as a proxy for the supply of renewable resources, it also evaluated a number of large renewable projects that are not currently in the queue (e.g., projects located in northern Maine, Canada, and New York) (see, e.g., Exh. NG-SFT at 56-60). Thus, the supply and demand analysis allowed National Grid to assess the likelihood and timeline for the development of these projects, as well as the magnitude of transmission investments needed to integrate these resources into the region (Tr. 5, at 1013-1014). Therefore, through its supply and demand analysis, National Grid reviewed a rich set of data regarding universe wide range of resources that may be eligible for Section 83 contracts. Finally, the Company's general awareness of developments in the region's renewable energy industry provided information that allowed it to better understand the universe of Section 83-eligible renewable resources (Tr. 5,

at 1010-1018).¹⁷⁹ We find that such information provided National Grid with additional context for evaluating alternative Section 83 resources available to it.

Based on all of the above, we conclude that the Company sufficiently identified and considered alternative Section 83-eligible resources as part of its analysis of whether to enter into PPA-1.

c. Comparison of Costs and Benefits

i. Introduction

Comparing the costs and benefits of alternative Section 83-eligible resources is particularly challenging because different renewable energy resources tend to have different costs and performance attributes, and tend to offer a variety of different benefits. The relevant alternative renewable resources to consider are onshore wind, biomass, and solar. However, as discussed in Section VII.D, above, DOER's proposed RPS regulations introduce great uncertainty regarding the extent to which biomass resources will qualify as an RPS resource and, therefore, whether they will be eligible for Section 83 contracts. Accordingly, for purposes of comparing the costs and benefits of PPA-1 to other Section 83-eligible resources, we focus our attention on onshore wind and solar facilities.

¹⁷⁹ For example, the Company states that its negotiations with the developer of a different offshore wind project, the Deepwater Block Island, Rhode Island project, increased its understanding of the costs of offshore wind technology (Tr. 2, at 451). National Grid also provided information regarding another offshore wind contract in the United States on the confidential record (Exh. AG-NG-1-13 (Att.) (Confidential)).

ii. Costs

The Department recognizes that contracts with onshore wind resources could be available to the Company at prices well below those included in PPA-1 (Exh. NG-MNM at 29; Tr. 2, at 361-364; see also Exh. TC-MEH, at 5; AG-NG-1-13-1 (Att.) (Confidential)). In contrast, at least in the short term, prices for solar resources will likely exceed the prices for PPA-1. If cost were the sole factor in determining the type of renewable technology that would provide most value to National Grid's ratepayers, then the Company clearly should enter into Section 83 contracts first with onshore wind facilities, then with offshore wind facilities, and finally solar facilities. However, cost is not the sole factor we consider. We must consider its costs and benefits when comparing it with other Section 83-eligible contracts. To the extent that the costs of PPA-1 exceed the cost of other potential Section 83 contracts, its benefits should correspondingly exceed the benefits of those contracts.

iii. Benefits

The Attorney General and DOER identify the following benefits of the Cape Wind facility: (1) unmatched size; (2) high capacity factor; (3) close proximity to load centers; (4) lack of a requirement for additional transmission and the associated costs; (5) readiness for construction; (6) ability to contribute significantly to the projected gap in future renewable energy supply; (7) ability to contribute substantially to reducing CO₂ emissions and the cost of GWSA compliance; (8) fuel diversity; (9) price suppression impact; (10) mitigation of fuel price volatility; (11) hedge against increase future fuel prices; (12) contribution to electric system reliability; (13) moderation of system peak load; (14) unique potential to create new

jobs; (15) ability to facilitate the development of an offshore wind industry; and (16) lowering of technology and project costs for future offshore wind facilities (Attorney General Brief at 32; DOER Brief at 43).

Many of these benefits would also be provided by other Section 83-eligible resources. For example, many renewable resources provide benefits associated with fuel diversity, contribution to reliability, and moderation of peak load. However, as discussed below, the Department concludes that the attributes of the Cape Wind facility, when considered in the aggregate, are unique among Section 83-eligible resources and will provide benefits to National Grid's ratepayers that far exceed those that could be provided by other potential Section 83 contracts. The critical unique attributes of the Cape Wind facility relate to its size, its capacity factor, its location on the regional transmission system, and its stage of development.

Compared to other projects in the ISO-NE and NYISO queues as well as other projects under development and the bids submitted in response to the Initial RFP, the Cape Wind facility's nameplate capacity is extraordinarily large for a Section 83-eligible resource (Exhs. NG-SFT-2, at 12-14; AG-NG-1-2(1) at 17-18, 21-22 (Confidential); APNS-CW-1-19(a)).¹⁸⁰ In addition, the annual capacity factor of the Cape Wind facility will exceed the annual capacity factor of land-based wind facilities and will significantly exceed the

¹⁸⁰ While the Department recognizes that the Initial RFP was restricted to resources located in Massachusetts, we nonetheless find it informative that the capacity of all qualifying projects combined was significantly less than the size of the Cape Wind facility (Exhs. NG-MNM-8; AG-NG-1-13, at 3-5 (Att.) (Confidential)).

annual capacity factor of solar facilities (Exh. NG-SFT-2, at 14; Tr. 7, at 1438-1439).¹⁸¹

Further, the peak capacity factors of the Cape Wind facility will significantly exceed those of land-based wind facilities (Exhs. NG-SFT at 106-110; NG-SFT-2, at 14; Tr. 7, at 1438-1439).¹⁸² In contrast, solar resources have a higher capacity factor than offshore wind facilities during summer peaks but a lower capacity factor during winter peaks.¹⁸³ The combination of the Cape Wind facility's large size and high annual and peak capacity factors relative to other Section 83-eligible resources, such as land-based wind and solar resources, means that its electricity output will significantly exceed the output of these other resources. Accordingly, the Cape Wind facility will produce far greater benefits in terms of: (1) its ability to contribute significantly to addressing the projected RPS gap; (2) its ability to contribute substantially to complying with GWSA emissions reductions requirements;

¹⁸¹ It is generally recognized that the annual capacity factor of offshore wind facilities exceeds those of onshore wind and solar facilities. The capacity factors used by ISO-NE for purposes of system planning for offshore wind, onshore wind, and solar facilities are 37 percent, 32 percent, and 13 percent, respectively (Exh. NG-SFT-2, at 14; Tr. 7, at 1438-1439). Cape Wind projects an annual capacity factor of 37.1 percent (Exh. AG-CW-3-7 at 1).

¹⁸² Cape Wind projects capacity factors for its facility of 29.4 percent and 45 percent during the peak summer and winter months, respectively (Exh. AG-CW-3-7 at 1-2). Cape Wind further projects that the facility's estimated capacity factor would have averaged 76 percent during ISO-NE's top ten historic peak hours, all of which occurred during the summer months (Exh. CW-DJD-1 at 17).

¹⁸³ Data from ISO-NE show that capacity factors for solar resources during summer and winter peak hours are equal to approximately 40 percent and four percent, respectively. (Exh. APNS-TMM-4, at 12-13, citing ISO New England, Final Scenario Analysis Modeling Assumptions (May 21, 2007).

(3) contributing to fuel diversity; (4) creating a higher level of price suppression impact; (5) mitigating fuel price volatility and acting as a hedge against future fuel prices; (6) contributing to system reliability; and (7) moderating system peak load. As discussed below, the value of the Cape Wind facility as compared to alternative Section 83 resources is further enhanced when these benefits are considered in combination with the facility's favorable location on the regional transmission grid and advanced stage of development.

The Cape Wind facility will interconnect with the regional system grid in southern New England, where the majority of the region's system load is located (see Sections II.A, VII.D.7, above). Other than the transmission lines needed to interconnect the Cape Wind facility to the grid which Cape Wind pays for, no significant transmission upgrades are required to reliably integrate the facility into the grid to serve load in southern New England. As discussed in Section VII.D., above, this contrasts with the significant expansion of the transmission system that would be required to support the delivery into southern New England of large quantities of renewable energy from facilities that could be located in northern New England, New York, or the bordering provinces of Canada (see, e.g., Exh. NG-SFT at 62 n.90, citing ISO-NE, New England 2030 Power System Study: Report to the New England Governors, 2009 Economic Study: Scenario Analysis of Renewable Resource Development (September 8, 2009)).

Three transmission project proposals that are intended to move power from northern New England, or the bordering provinces of Canada, into southern New England are: (1) the Northern Pass Project, which involves the siting, permitting, and construction of a new 2,000 MW high-voltage direct-current ("HVDC") interconnection between southern Quebec

and southern New Hampshire; (2) the “Northeast Energy Link,” which involves the siting, permitting, and construction of new transmission facilities to connect southern New England with resources located in Northern Maine, New Brunswick, other resources in Atlantic Canada, and Quebec; and (3) the “Green Line,” which involves the construction of a 600 MW HVDC transmission line that would run underwater from Wiscasset, Maine to Boston (Exh. NG-SFT at 65-66). Cost estimates for the Green Line project are \$1.8 billion and for the Northeast Energy Links project are between \$2.0 and \$2.3 billion (Exh. NG-SFT at 68 n.101). The length of time required to complete major transmission projects such as these can be estimated from the experience of the Southwest Connecticut Reliability Project, which required 7.5 years to complete, and the Maine Reliability Project, which is expected to require six years to complete. Both of these projects involved siting facilities in a single state and are designed for reliability purposes (Exh. NG-SFT-R at 16-17). Thus, while large Section 83-eligible resources located in northern New England, New York, or Canada may be available in the future, these resources all face significant costs, risks and uncertainties associated with transmission needs.

The Cape Wind facility is in an advanced stage of development after ten years and represents a viable resource. As stated in Section II.B.2, above, it has received a Certificate of Environmental Impact and Public Interest from the Massachusetts Energy Facilities Siting Board (issued May 27, 2009), which grants to Cape Wind all state, regional and local permits, licenses, and approvals required to construct the transmission lines in Massachusetts (Exhs.

CW-DJD-1 at 4; DPU-CW-7-28 (Att.)).¹⁸⁴ It has successfully obtained all other state and local permits, and received the primary federal approvals for the siting and operation of the facility (Exhs. CW-DJD-1, at 4-5; DPU-CW-7-28 (Att.)).

The permitting and regulatory process required to complete a project will always be specific to that project. However, it is reasonable to conclude that, to varying degrees, other large-scale renewable energy resources will face substantial uncertainties and risks associated with project and transmission permitting, siting, and other factors prior to beginning operation. Alliance's claim that the Cape Wind facility is not in an advanced stage of development due to pending litigation and appeals is not persuasive.¹⁸⁵ While the Cape Wind facility must complete additional steps before construction and operation can begin, its advanced stage of development clearly distinguishes it from projects of comparable size (see Exhs. DPU-CW-7-28 (Att.); DPU-CW-7-29 (Att.); DPU-CW-7-30; DPU-CW-7-31; DPU-CW-7-32; DPU-CW-7-33; DPU-CW-7-34 (Att.)).

Based on the above, the Department concludes that the Cape Wind facility will provide unique benefits that far exceed those of any individual Section 83-eligible resource. In our view, these unique benefits outweigh the high costs of PPA-1 relative to land-based wind projects, which represent the primary alternative Section 83-eligible resources.

¹⁸⁴ As noted in Section II.B.2, the Energy Facilities Siting Board's decision was recently affirmed by the Massachusetts Supreme Judicial Court.

¹⁸⁵ We note that Cape Wind has prevailed in all twelve appeals that have been decided to date (Tr. 3, at 513-514).

Nonetheless, we must also consider whether there may be smaller resources that, when considered in the aggregate, could provide benefits comparable to the Cape Wind facility at a cost equal to or less than the cost of PPA-1. Alliance asserts that the Company's ratepayers would be better served by multiple Section 83 contracts with a geographically diverse group of smaller renewable resources (Alliance Brief at 41-43).¹⁸⁶ Our review of the evidence in this case, including the bids submitted in the Initial RFP and the notices of intent submitted in response to the Revised RFP indicate that this is not the case (Exh. AG-NG-1-13 (Confidential); RR-APNS-NG-1). A combination of smaller renewable resources, even when considered in the aggregate, is unlikely to provide benefits comparable to the Cape Wind facility, particularly with regard to Cape Wind's high capacity factor, its location near major load centers, its siting and permitting status, and its lack of need for substantial additional transmission infrastructure.

4. Conclusion

More than 14,031 GWh of new renewable generation may need to be added to New England by 2025 in order to comply with the region's renewable requirements (see Section VII.D).¹⁸⁷ This will likely require the development of renewable resources of

¹⁸⁶ Alliance states that, among other things, this would increase reliability and expose ratepayers to fewer risks (Alliance Brief at 41-43). The Department addresses the reliability benefits provided by the Cape Wind facility vis-à-vis the reliability benefits that would be provided by a portfolio of small generators in Section VII.D.7, above.

¹⁸⁷ This conclusion is based on the analysis of renewable energy supply and demand presented by National Grid (Exhs. NG-SFT at 38-88; NG-SFT-2; NG-SFT-3). To put this number in context, assuming that this energy were all to be provided by wind resources and that these wind resources had the same capacity factor as the Cape Wind

many types, technologies, and sizes; and, in particular, will require the development of a significant number of new wind energy facilities, including offshore wind facilities.

For the reasons discussed above, we find that it is appropriate for National Grid to procure renewable energy through PPA-1 even though there are other, lower-cost alternatives available. National Grid appropriately identified and considered other Section 83-eligible resources in its decision to enter into PPA-1. The unique benefits provided to National Grid's ratepayers by PPA-1 will far exceed the benefits that could be provided by other Section 83-eligible contracts, either individually or in the aggregate. In our view, these unique benefits outweigh the high costs of PPA-1. Accordingly, the Department concludes that National Grid's decision to procure renewable power through PPA-1 with the Cape Wind facility, instead of alternative Section 83 contracts, is in reasonable.

C. Evaluation of Contract Price

1. Introduction

A fundamental question in our public interest inquiry is whether, apart from the impact on electric bills, PPA-1 is too expensive. That is, we must consider whether National Grid customers are paying too much for PPA-1 and also whether they are likely to pay the developers of the Cape Wind project "windfall profits." The Attorney General and Cape Wind presented several analyses to address the reasonableness of the Cape Wind project's contract price, each of which we address in detail below.

facility, this figure would be the equivalent of roughly 4,300 MW of new wind resources, or approximately nine Cape Wind projects (see Section VII.D).

2. Estimate of the Cape Wind Project's Likely Costs

In addition to performing an analysis of the customer protection provisions of PPA-1 and comparing the prices and costs of other offshore wind projects to PPA-1, the Attorney General collected cost information about offshore wind and used that information to estimate the likely costs of the Cape Wind facility (Exh. AG-JWJC-1, at 41). More specifically, she used the cost data to derive estimates for the Cape Wind project's likely installed cost, financing cost, and future O&M expenses (Exh. AG-JWJC-1, at 41). The Attorney General then used those estimates to determine whether PPA-1 reasonably reflects the Cape Wind facility's costs or, by contrast, would generate a windfall for the project developers (Exh. AG-JWJC-1, at 41-42). In other words, the Attorney General asked how much it *should* cost to build and operate the facility and, in light of that analysis, whether the contract price is reasonable.¹⁸⁸

¹⁸⁸ The Attorney General used a simplified discounted cash flow model to derive the Cape Wind facility's estimated costs. According to the Attorney General, this framework is widely used to value assets for planning purposes (Exh. AG-JWJC-1, at 41-42).

Table 7: Cape Wind Project Estimated Cost Inputs in 2013 dollars¹⁸⁹

Installed cost (\$/kW)	\$5,600
O&M (\$/MWh)	\$30 to \$50
O&M escalator %/year	3.5 percent
Capacity factor	37.1 percent
Project life years	25
Contract term years	15
Escalation factor %/year	3.5 percent
Initial cash outlay \$/year	50 percent for 2 years
Debt financing	70 percent at 7.5 percent
Equity financing	30 percent at 18 percent
ITC	Yes, 30 percent
Tax rate	35.0 percent
Tax depreciation	5-year MACRS ¹⁹⁰ on 95 percent of installed cost

Table 7 summarizes the Attorney General's estimated cost inputs.¹⁹¹ Based on these costs, she further estimated the overall installed costs of the Cape Wind facility to be approximately \$5,600 per kW (Exh. AG-JWJC-1, at 42, 45). She observes that this cost estimate is relatively high as compared to project costs in Europe and slightly higher than the assumption used by a DOER report (of \$5,400 per kW of installed cost for a hypothetical 300 MW offshore wind project) (Exh. AG-JWJC-1, at 43-45).

Based on this information and on the observation that the Cape Wind project may be one of the first offshore wind projects installed in this country, the Attorney General concludes that the initial price for the first year of PPA-1 that would reasonably reflect the Cape Wind

¹⁸⁹ Source: Exh. AG-JWJC-1, at 50.

¹⁹⁰ "MACRS" is the acronym for "Modified Accelerated Cost Recovery System," which is the current tax depreciation system in the United States.

¹⁹¹ Exhibit AG-JWJC-1 provides further detail as to how these estimates were derived.

project's costs is approximately \$188.9 per MWh (as compared to the \$187 per MWh of PPA-1), with a corresponding levelized price over 15 years of \$232.7 per MWh (as compared to the PPA-1 levelized price of \$230.4 per MWh) (Exh. AG-JWJC-1, at 45, 50). The Attorney General observes that her estimated price is slightly higher than the unadjusted base price of PPA-1 assuming a 468 MW Cape Wind project, and slightly below the maximum base price of PPA-1 for a project of 396 MW or less and, therefore, is generally consistent with the potential range of base prices under PPA-1 (Exh. AG-JWJC-1, at 50).

We find the Attorney General's analysis of the Cape Wind project's likely costs to be reasonable, based on the use of a credible methodology and assumptions. The Attorney General's conclusion that the Cape Wind facility's estimated costs would warrant a price of \$188.9 per MWh in the first year of PPA-1 and the fact that the price of PPA-1 in the first year (i.e., \$187 per MWh) is less than this amount, supports a finding that the prices contained in PPA-1 are reasonable.

3. Cost-Adjusted Price Provision

a. Introduction

PPA-1 provides for a downward price adjustment in the event that Cape Wind's IRR exceeds 10.75 percent (PPA-1, at Exh. E, App. X, ¶ 4; Settlement, Art. 2.1.C; Settlement Agreement Explanatory Statement at 3, Exh. NG-MNM (Supp.) at 6). Specifically, if the actual costs to finance and construct the project ended up being lower than originally estimated such that Cape Wind's after-tax IRR exceeded 10.75 percent, there would be a one-time

reduction to PPA-1's initial bundled price¹⁹² (i.e., the Cost-Adjusted Price) (PPA-1, at exh. E, App. X, ¶ 4; Settlement Agreement, Art. 2.1.C; Settlement Agreement Explanatory Statement at 3; Exhs. NG-MNM (Supp.) at 6; AG-JWJC-1, at 21-22). The benefit of the decrease in project costs would be shared by National Grid customers and Cape Wind, with customers receiving 60 percent of the benefits through a reduction to PPA-1's initial bundled price and Cape Wind receiving 40 percent of the benefits (PPA-1, at Exh. E, App. X, ¶ 4; Settlement Agreement, Art. 2.1.C; Settlement Agreement Explanatory Statement at 3; Exhs. NG-MNM (Supp.) at 6; DPU-CW-7-45).

The IRR would be calculated based on: (1) the actual cost of the project upon completion, as confirmed by an independent verification agent, discussed below; and (2) the forecasted net revenue stream of the project, based in part on Cape Wind's forecasted operations and maintenance ("O&M") costs¹⁹³ (Settlement Agreement, Art. 2.1.C; Settlement Agreement Explanatory Statement at 3-4 & n.2). The final, actual project costs and forecasted O&M would be subject to a one-time review by an independent verification agent selected by the Attorney General who could challenge any costs on the grounds that they: (1) were inaccurately stated; (2) not supported by documentation; or (3) resulted from mathematical

¹⁹² This pricing adjustment is triggered only if Cape Wind's return on an after-tax basis, reflecting both debt and equity, is at least 10.75 percent. Therefore, if the Cape Wind project's actual costs result in an unlevered return of less than 10.75 percent, there will be no price adjustment (Settlement, Art. 2.1.C; Settlement Explanatory Statement at 3-4).

¹⁹³ To determine the net revenue stream applicable to the project, Cape Wind will need to forecast an amount for anticipated O&M costs based on the project's O&M contracts with its vendors and other related expenses (Settlement Explanatory Statement at 3 n.2).

errors (PPA-1, exh. E, App. X, ¶ 6; Settlement Agreement, Art. 2.1.C; Settlement Explanatory Statement at 4; Exh. NG-MNM (Supp.) at 7).

b. Positions of the Parties

i. National Grid

National Grid contends that the Cost-Adjusted Price provision ensures that Cape Wind will not be able to achieve an excessive profit margin by overstating construction estimates and then cutting those costs during construction (National Grid Brief at 35). National Grid argues that the Cost-Adjusted Price provision instead provides Cape Wind with an incentive to build the project at the lowest reasonable cost (National Grid Brief at 35). National Grid notes that customers will receive more than half of the benefits of any reduction in construction costs and argues that this benefit supports the reasonableness of PPA-1 (National Grid Brief at 35). National Grid also claims that the verification agent will ensure an objective review of the final project cost report and forecasted O&M costs (National Grid Brief at 11). In response to Alliance's allegation that Cape Wind will earn an ROE of as much as 79 percent under the PPAs, National Grid claims that the Department should reject this as an unsubstantiated assertion without basis in record evidence¹⁹⁴ and, in any event, that such an ROE would lead to

¹⁹⁴ On October 8, 2010, Alliance filed the first of two motions to reopen the record and admit additional evidence for consideration. D.P.U. 10-54, Motion of Alliance to Protect Nantucket Sound to Reopen the Record to Admit Additional Evidence. Alliance sought to admit certain workpapers that it claimed would support the assertion made by one of its witnesses in rebuttal testimony that Cape Wind's ROE would be approximately 79 percent. *Id.* at 1-2. Alliance also included these workpapers as Appendix B of its initial brief. On October 20, 2010, the Attorney General filed a motion to strike Appendix B as well as all references to Appendix B in Alliance's brief. D.P.U. 10-54, Attorney General Motion to Strike Sections of the Alliance to Protect

a price reduction under the terms of PPA-1 (National Grid Reply Brief at 25, citing Alliance Brief at 47-48).

ii. Cape Wind

Cape Wind claims that the Cost-Adjusted Price provision benefits ratepayers because it offers a one-time reduction in price and the sharing of, on a 60/40 basis, any decrease in the facility's costs if the actual costs of financing and construction enable Cape Wind to earn above an after-tax IRR of 10.75 percent (Cape Wind Brief at 34, citing Exhs. NG-MNM-S at 6; Explanatory Statement at 3; Settlement Agreement, Article 2.1C). Cape Wind further argues that this provision benefits customers because it provides highly valuable insurance that customers will not be harmed in the event that actual project costs are below current estimates (Cape Wind Brief at 34, citing Exh. AG-JWJC-1, at 22).

In response to Alliance's allegation that Cape Wind could earn an ROE of as much as 79 percent, Cape Wind claims that: (1) the Department cannot rely on this evidence because it is not a part of the record; and (2) Alliance's calculations are based on illogical and patently false assumptions (Cape Wind Reply Brief at 17 & n.12, citing Alliance Initial Brief at 47).

Nantucket Sound's Initial Brief at 1. The Department denied Alliance's motion to reopen the record and, by extension, granted the Attorney General's motion to strike, on the grounds that good cause did not exist to reopen the record because Alliance had ample opportunity to present full and complete supporting documentation before the record closed. D.P.U. 10-54, Interlocutory Order on: (1) Motions of the Alliance to Protect Nantucket Sound to Reopen the Record; and (2) Motion of the Attorney General to Strike at 22 n. 10 (November 22, 2010). Therefore, the Department will not consider the materials in Appendix B to Alliance's Initial Brief.

As to the latter point, Cape Wind contends that Alliance, among other things, improperly assumes that the Cape Wind project can leverage 90 percent or more debt, which is inconsistent with how projects are currently financed in accordance with standard industry practice (Cape Wind Reply Brief at 17-18). In any event, Cape Wind concludes that if the project were able to achieve an IRR of greater than 10.75 percent, 60 percent of those benefits would flow to customers through the Cost-Adjusted Price provision (Cape Wind Reply Brief at 18).

iii. Attorney General

The Attorney General argues that because PPA-1 is well-priced with respect to the Cape Wind facility's expected costs and rate of return, it is unlikely that the project will have an IRR greater than 10.75 percent and trigger the Cost-Adjusted Price provision (Attorney General Brief at 21, citing Exh. AG-JWJC-1, at 23). According to the Attorney General, while this cost-adjustment provision may not guarantee a reduction in costs, it is nonetheless a benefit because it provides insurance that customers will share the benefits of any reduction if actual project costs are significantly less than current estimates (Attorney General Brief at 21, citing Exh. AG-JWJC-1, at 22). The Attorney General contends that if the costs are significantly reduced, this provision will prevent windfall profits to Cape Wind and could even produce significant savings (Attorney General Brief at 21, citing Exh. AG-JWJC-1, at 23).

The Attorney General argues that if the Department grants Alliance's motion to reopen the record, the Department should nonetheless disregard the information contained in the workpapers attached to Alliance's brief because they fail to provide necessary calculations and

assumptions (Attorney General Brief at 21 n.11, citing Exh. TMM-R at 4, n.8; Attorney General Reply Brief at 8-10). The Attorney General further maintains that, although it is theoretically possible for the Cape Wind project to yield a 79 percent ROE while realizing an unlevered IRR of 10.75 percent or less, this would only occur if the project were financed almost entirely by debt, in which case the value of the equity invested and the corresponding equity return would be so small that it would not represent a significant portion of the overall project cost (Attorney General Brief at 21 n.11, citing Tr. 11, at 2269-2270; Attorney General Reply Brief at 8-10).

iv. Alliance to Protect Nantucket Sound

Alliance argues that because Cape Wind has declined to produce its cost information in this proceeding, Cape Wind should be estopped from asserting that any of the cost-related price adjustment provisions of PPA-1 provide benefits (Alliance Brief at 47; Alliance Reply Brief at 21, citing Tr. 1, at 66). According to Alliance, without the Cape Wind project's actual cost estimates, it is impossible to determine what value, if any, can be assigned to the Cost-Adjusted Price provision¹⁹⁵ (Alliance Reply Brief at 21). Finally, Alliance argues that

¹⁹⁵ On September 24, 2010, the Department denied Alliance's motion to compel Cape Wind's response to information requests related to Cape Wind's internal costs. The Department determined that the information sought was not reasonably calculated to lead to the discovery of admissible evidence (Hearing Officer Ruling, Tr. 3, at 490). Our reasoning there holds here as well: the parties to this proceeding can assess the value of PPA-1's pricing adjustment provisions, including the Cost-Adjusted Price provision, without reference to Cape Wind's internal financial information. Moreover, we note that Alliance presents this argument for the first time on brief in one sentence and provides no legal authority or reasoned argument in support of its contention. Commonwealth v. Best, 50 Mass. App. Ct. 722, 727 (2001) (argument consisting of

Cape Wind is poised to earn an ROE of as much as 79 percent without triggering the Cost-Adjusted Price provision (Alliance Brief at 47-48; Alliance Reply Brief at 21).

v. CLF et al.

CLF et al. argue that the Cost-Adjusted Price provision is beneficial to customers because it will reduce the price of PPA-1 if Cape Wind is able to lower its actual project costs such that it earns an IRR of 10.75 percent or greater (CLF et al. Brief at 7).

vi. Department of Energy Resources

DOER argues that, although it is difficult to predict whether the Cost-Adjusted Price provision will be triggered, this provision provides a benefit to ratepayers because it insures them against overpaying while maintaining an incentive for Cape Wind to reduce its costs (DOER Brief at 22, citing Exh. AG-JWJC at 22). DOER contends that because this provision will reduce the cost to ratepayers under some scenarios without increasing the price, the Department should recognize this provision as an additional means of ensuring that the PPAs are reasonable (DOER Brief at 22).

c. Analysis and Findings

Under the Cost-Adjusted Price provision, if the project's actual costs cause Cape Wind to have an IRR of more than 10.75 percent, the reduction in costs will be shared by Cape Wind and National Grid's ratepayers (PPA-1, at exh. E, App. X, ¶ 4; Settlement, Art. 2.1.C; Settlement Agreement Explanatory Statement at 3; Exh. NG-MNM (Supp.) at 6). This pricing adjustment mechanism provides Cape Wind with a financial incentive to reduce its construction

two lines and a one-sentence conclusion with no citation to legal authority does not merit extended discussion).

costs, for if it reduces its costs, its overall return on investment will increase (i.e., it will receive 40 percent of the cost savings). More importantly, the pricing adjustment mechanism ensures that if Cape Wind is able to reduce its costs, the savings will be shared by both Cape Wind and National Grid ratepayers, with ratepayers receiving the majority of the cost savings (i.e., 60 percent) through a one-time reduction in the initial bundled price of PPA-1.

Alliance argues that Cape Wind could earn an ROE of as much as 79 percent without triggering the Cost-Adjusted Price provision (Alliance Brief at 47-48; Alliance Reply Brief at 21; see also Exhs. APNS-TMM-R at 4-6; TMM-10). That is not the case. Alliance makes several assumptions in its analysis that are not supported by the record. For example, Alliance assumes that Cape Wind will receive the federal investment tax cash grant when the record indicates that Cape Wind is much more likely to qualify for the ITC or PTC (Tr. 11, at 2268; Exhs. DPU-CW-7-11; DPU-CW-2-8). Furthermore, Alliance improperly relies on a hypothetical capital structure of 60 percent debt, 30 percent tax grant, and ten percent equity,¹⁹⁶ which is not representative of current financing conditions. The Department finds that only under extreme conditions, with extraordinary amounts of debt financing, would it be even theoretically possible for Cape Wind's equity investors to earn an ROE of 79 percent (see Tr. 11, at 2269-2271). Moreover, if Cape Wind's ROE does ever reach 79 percent, we find that, contrary to Alliance's assertions, Cape Wind's IRR would exceed 10.75 percent under any realistic circumstance, thus triggering the Cost-Adjusted Price provision to the benefit of ratepayers (Tr. 11, at 2269-2271).

¹⁹⁶ Exh. APNS-TMM-R at 5 n.9.

The Department finds that this provision provides significant, meaningful protection for ratepayers. By establishing a threshold on Cape Wind's IRR and limiting Cape Wind's return if it exceeds that threshold, the Cost-Adjusted Price provision makes it likely that customers will not pay excessive rates of return to Cape Wind's project developer or its investors. Moreover, the participation of an independent verification agent who will review Cape Wind's final project costs will serve to ensure that the costs used in determining whether the Cost-Adjusted Price provision is triggered are the actual construction costs incurred by Cape Wind in developing the facility.

4. Comparison to Other Offshore Wind Facilities

a. Introduction

The Attorney General and Cape Wind each provided analyses comparing the costs and prices of the Cape Wind facility to other existing and proposed domestic and foreign offshore wind projects. With regard to long-term contracts within the United States, both the Attorney General and Cape Wind compared PPA-1 to a contract between Delmarva Power & Light Company ("Delmarva") and Bluewater Wind Delaware LLC ("Bluewater"), a 200 MW offshore wind facility off the coast of Delaware. The Attorney General also compared PPA-1 to: (1) a contract between National Grid and Deepwater Block Island LLC ("Deepwater Block Island"), a 28.8 MW project proposed for waters off of Rhode Island; and (2) a domestic offshore wind project¹⁹⁷ (Exh. AG-JWJC-1, at 30-34).

¹⁹⁷ Information regarding this project has been granted confidential treatment pursuant to G.L. c. 25, § 5D (Tr. 1, at 12-13).

The Attorney General and Cape Wind each compared the initial price of \$187 per MWh for PPA-1 to the contract price for Bluewater (Exhs. AG-JWJC-1, at 30-31, 36-37; CW-RBS-9, at 40). The Bluewater contract with Delmarva starts at an initial price (in 2007 dollars) in 2007 of \$98.90 per MWh for energy, \$70.20 per kW-year for capacity,¹⁹⁸ and \$15.30 per REC,¹⁹⁹ and escalates at 2.5 percent per year for 25 years (Exh. AG-JWJC-1, at 34-36). In order to make a direct comparison of the prices to be paid under different contract terms, with different origination dates, both the Attorney General and Cape Wind made certain adjustments in order to use levelized price as a common metric for all projects, including for PPA-1 (see Exhs. AG-JWJC-1, at 10-11, 33-38; CW-RBS-9, at 37-38).

While both the Attorney General and Cape Wind calculated a 2007 bundled price for Bluewater and escalated it to a 2013 price at the Bluewater contract's escalation rate, the methods for facilitating a comparison with PPA-1 were different. For the purpose of the

¹⁹⁸ The Attorney General translates the \$70.20 per kW-year capacity price to \$25.10 per MWh using the Bluewater facility's assumed capacity factor of 31.91 percent (Exhs. AG-JWJC at 34). Cape Wind calculates a capacity price equal to \$8 per MWh (Exh. CW-RBS-10).

¹⁹⁹ Pursuant to Delaware's RPS requirement, each offshore wind facility REC purchased by Delmarva under the Bluewater contract counts as 3.5 RECs for its RPS compliance purposes. This reduces the number of RECs to be purchased by Delmarva through the contract, thus allowing Bluewater to sell RECs (and earn additional revenue) outside of the contract (Exhs. AG-JWJC-1, at 34 n.24; CW-RBS-9, at 37). To account for the additional REC revenue that this provision may provide to Bluewater, the Attorney General added \$10.94 per MWh to the contract price, based on the assumption that Bluewater is able to sell the additional RECs at the price included in the contract. In contrast, Cape Wind added \$38.70 per MWh to the contract price, based on the assumption that Bluewater is able to sell the additional RECs at 3.5 times the contract price (Exhs. AG-JWJC at 34-35; CW-RBS-9, at 37; CW-RBS-10).

Attorney General's analysis, because the Bluewater PPA has a longer term (i.e., 25 years) and a lower escalation rate (i.e., 2.5 percent), she adjusted the contract to a term and escalation rate similar to those of PPA-1 (id.).²⁰⁰ The Attorney General concluded that the levelized price of the adjusted Bluewater contract, at \$230.6 per MWh, is essentially the same as PPA-1's levelized price of \$230.4 per MWh (Exh. AG-JWJC-1, at 10-11, 35-37).

In contrast, Cape Wind adjusted the PPA-1 term to 25 years, assuming the renewal option is exercised and cost-plus pricing results. Cape Wind did not include any value for the other potential adjustment mechanisms in PPA-1, such as for a reduction in debt financing (Exh. CW-RBS-9, at 37-38).²⁰¹ Cape Wind concluded that its estimate of the levelized price of the Bluewater contract of \$235 per MWh is approximately ten percent higher than its estimate of the levelized price for adjusted PPA-1 of \$214 per MWh (Exh. CW-RBS-9, at 37-39, 41).

With regard to the Deepwater Block Island contract, the Attorney General stated that if the project were built at its estimated cost, the levelized price after adjustment to the terms of

²⁰⁰ Assuming both projects have a 25-year useful life, the Attorney General analyzed the revenue stream from Bluewater's 25-year contract and determined an equivalent revenue stream resulting from a 15-year contract and ten years of market revenues (Exh. AG-JWJC-1, at 36; Tr. 11, at 2332-2335 (Confidential)). The Attorney General then derived an equivalent starting price for a contract, with similar terms to PPA-1, of about \$187 per MWh, escalating at 3.5 percent per year, to arrive at the levelized price of about \$230.6 per MWh (Exh. AG-JWJC-1, at 36-37).

²⁰¹ Again, assuming both projects have a 25-year useful life, Cape Wind analyzed the revenue stream associated with PPA-1 followed by ten years of cost-plus prices, based upon Cape Wind's operating characteristics and the Attorney General's cost-plus price estimates (Exh. CW-RBS-R at 37-38). Then, Cape Wind determined the levelized price of a 25-year PPA that yields an equivalent revenue stream, which Cape Wind estimated to be \$214 per MWh (Exhs. CW-RBS-R at 41; CW-RBS-11).

PPA-1 would equal approximately \$340 per MWh, which is approximately 48 percent higher than the \$230.4 per MWh levelized price for Cape Wind under PPA-1²⁰² (Exh. AG-JWJC at 33). The Attorney General's calculations did not include any of the benefits associated with the various potential downward price adjustments contained in PPA-1 (Exh. AG-JWJC-1, at 29-30).

The Attorney General and Cape Wind also analyzed cost and pricing information for foreign offshore wind facilities. The Attorney General analyzed the *costs* for foreign offshore facilities and compared them to the estimated costs of the Cape Wind facility (Exh. AG-JWJC at 38-41). Cape Wind analyzed the *prices* paid to foreign offshore facilities and compared those prices to PPA-1 prices (Exhs. CW-RBS-9, at 41-16; CW-RBS-12; CW-RBS-13; CW-RBS-14).

The Attorney General analyzed cost information for 25 foreign²⁰³ offshore wind projects with publicly available information, including 17 projects in operation, one project under construction, and seven projects that have been financed but not yet built (Exhs. AG-JWJC

²⁰² According to the Attorney General, if the Deepwater Block Island project were built at its estimated cost, the proposed price would be \$244 per MWh in 2013 dollars, escalating annually at a rate of 3.5 percent over the term of the 20-year contract. The Attorney General discounts the price stream to the present day, and adjusts the contract to a 15-year term (Exh. AG-JWJC at 33). The Attorney General recognizes that the price of the contract could decrease if the actual project costs are lower than the current estimates (*id.*).

²⁰³ All but one of the projects included in the Attorney General's analysis are located in Europe (Exh. AG-JWJC-7).

at 38-39; AG-JWJC-6).²⁰⁴ Costs for these projects range from \$1.3 million per MW to \$5.8 million per MW, with an average of \$3.4 million per MW (Exhs. AG-JWJC at 38-39; AG-JWJC-6). The Attorney General found that the estimated project cost for the Cape Wind facility, \$5.6 million per MW, is higher than all but one of the foreign projects included in her analysis (Exh. AG-JWJC at 38-39).²⁰⁵

Cape Wind compared PPA-1 prices to prices for offshore wind projects in Ontario, Canada and several European countries (Exh. CW-RBS-9, at 41). Cape Wind noted that the pricing mechanisms vary across these markets (Exhs. CW-RBS-9, at 41; CW-RBS-12).²⁰⁶

²⁰⁴ The Attorney General stated that currently there are at least 59 offshore wind projects in foreign countries in operation, under construction, or being financed with a total capacity of 5,742 MW (Exh. AG-JWJC-1, at 38). Specifically, there are: (1) 43 projects in operation, almost all in Europe, with a capacity of 2,207 MW; (2) nine projects under construction representing 1,818 MW of capacity; (3) and seven projects being financed with a capacity of 1,718 MW (Exh. AG-JWJC-1, at 38). According to the Attorney General, cost information is available for only some of these projects (Exh. AG-JWJC-1, at 38-39).

²⁰⁵ To render the foreign project costs more comparable to the Cape Wind facility, the Attorney General adjusted the costs to account for differences in two project characteristics that are likely to have significant cost implications: (1) the distance of a project from the shore; and (2) the average water depth (Exhs. AG-JWJC-1 at 39; AG-JWJC-7). The adjusted costs of the foreign projects range from \$1.3 million per MW to \$4.8 million per MW with an average of \$3.3 million per MW (Exhs. AG-JWJC-1 at 39; AG-JWJC-7).

²⁰⁶ For example: (1) in Spain, offshore wind receives the market price of electricity plus a premium of 90€ per MWh; (2) in Ontario, Ireland, and Germany, offshore wind is supported by a feed-in tariff; (3) in Denmark and the Netherlands, PPAs for offshore wind are awarded using a “tender process;” and (4) in Belgium and the United Kingdom, offshore wind receives the market price of electricity plus a green certificate (Exh. CW-RBS-9, at 41-42).

Cape Wind calculated adjustments to account for differences in the variety of contracts.²⁰⁷

Cape Wind further adjusted prices to take into account the varying terms that apply to the pricing mechanisms, converting the terms of all the pricing mechanisms (and PPA-1) to 25 years (Exhs. CW-RBS-9, at 43).²⁰⁸ Accounting for these adjustments, Cape Wind established a range of levelized prices from \$177 per MWh in Denmark to \$263 per MWh in the United Kingdom (Exhs. CW-RBS-9, at 44; CW-RBS-14). Cape Wind noted that the levelized price it calculates for PPA-1, adjusted as previously described, \$214 per MWh, is well within this range (Exh. CW-RBS 9, at 44-45).

b. Positions of the Parties

i. National Grid

According to National Grid, the reasonableness of the prices included in PPA-1 depends upon whether the prices fall within the range that can reasonably be expected for offshore wind resources (National Grid Brief at 33-34). The Company argues that several data points demonstrate that PPA-1 is reasonable (National Grid Brief at 33). First, through its

²⁰⁷ To take into account differences among the markets in the treatment of transmission costs, Cape Wind adjusted the prices in those markets that subsidize the transmission costs of developers (Exh. CW-RBS-9, at 42). In those markets where transmission costs are subsidized, Cape Wind adjusted total project costs upward by approximately nine percent, calculated by dividing the transmission component of PPA-1's price (\$17 per MWh) by its total price (\$187 per MWh) (Exh. CW-RBS-9, at 42).

²⁰⁸ To do so, Cape Wind assumed that projects will receive "cost-plus" pricing similar to what Cape Wind would be paid under the PPA-1 option-to-extend provision, using the cost-plus values estimated for Cape Wind by the Attorney General (Exh. CW-RBS-9, at 43). Cape Wind states this pricing arrangement represents a reasonable but conservative estimate of the payments that will follow the initial support mechanisms, in that it represents the lowest payment stream that will be sufficient to compensate a developer for operating and maintaining a project (Exh. CW-RBS-9, at 43).

Rhode Island affiliate, the Company reviewed price information from the Deepwater Block Island wind project, indicating a higher price than that of PPA-1 (National Grid Brief at 33-34). Through that experience, National Grid had an opportunity to review financial data from Deepwater Block Island, as well as financial data from Cape Wind, allowing the Company to assess Cape Wind's assumptions compared to those of a potential competitor (National Grid Brief at 34). Second, in the course of the Deepwater Block Island contract proceeding before the Rhode Island Public Utilities Commission, the Company reviewed pricing analyses for offshore wind projects in the United Kingdom, Germany, France, and Spain. Third, the Company reviewed prices from a feed-in tariff program for freshwater offshore wind facilities installed in Ontario, Canada (National Grid Brief at 34).

In addition, National Grid argues that the Attorney General's analysis of comparable offshore wind projects in the United States and abroad demonstrates that they are consistent with the prices of PPA-1, even without consideration of the potential price reductions included in the contract achieved through the Settlement with the Attorney General (National Grid Brief at 34-35). Finally, the Company argues that the pricing comparisons presented by Cape Wind also show that the pricing of PPA-1 is in line with other offshore wind projects (National Grid Brief at 34).

ii. Cape Wind

Cape Wind asserts that the price of PPA-1 compares favorably to that of other offshore wind projects in the United States and elsewhere (Cape Wind Brief at 44-46; Cape Wind Reply Brief at 20). First, with respect to offshore wind projects in the United States, citing the

Attorney General's analysis, Cape Wind argues that the price of PPA-1 is far better than the price of Deepwater Block Island, which has an equivalent levelized price of \$340 per MWh, which is approximately 48 percent higher than the levelized price of PPA-1 (Cape Wind Brief at 45; Cape Wind Reply Brief at 20). According to Cape Wind, after making several adjustments to account for the different terms of the contracts, the contract prices for PPA-1 and the Bluewater contract are almost identical in 2013 (i.e., starting prices of \$187 per MWh for PPA-1 and \$186 per MWh for the Bluewater contract) but the estimated levelized price of the Bluewater contract is \$235 per MWh, which is \$21 per MWh more than Cape Wind's estimate of the projected levelized price of PPA-1, after adjusting for the difference in contract terms (Cape Wind Brief at 45-46; Cape Wind Reply Brief at 20). Cape Wind contends that while the Bluewater facility is in a much earlier stage of development than the Cape Wind facility, it is an appropriate point of comparison for an assessment of reasonableness because the contract price includes energy, capacity, and RECs, and the Bluewater contract was procured using an RFP process (Cape Wind Brief at 45-46).

According to Cape Wind, the prices of many offshore wind projects outside of the United States also compare favorably to the prices in PPA-1 (Cape Wind Brief at 47-49). Cape Wind compared PPA-1 to both the 2013 price and the 25-year levelized price of offshore wind projects in Ontario and seven European countries after making several adjustments to account for differences in pricing mechanisms (Cape Wind Brief at 47-48). Cape Wind asserts that PPA-1 compares very favorably for the first year, with only projects in Spain receiving a lower price (Cape Wind Brief at 48). Cape Wind also argues that PPA-1 compares favorably

to projects in other countries that do not have similar pricing adjustment mechanisms (Cape Wind Brief at 48-49; Cape Wind Reply Brief at 21). In response to Alliance's argument that it is not appropriate to compare PPA-1 to European projects because such projects are not eligible for United States tax incentives, Cape Wind counters that the European projects are subject to their own incentive systems which are not available to the Cape Wind facility (Cape Wind Reply Brief at 21).

iii. Attorney General

The Attorney General states that she has presented an evaluation that shows that PPA-1 is reasonable compared to other offshore wind projects in the United States and offshore wind projects in Europe (Attorney General Brief at 25-27). The Attorney General argues that the prices of PPA-1 are equivalent to comparable projects in the United States (i.e., Bluewater and the project afforded confidential treatment) and are even lower after factoring in PPA-1's potential downward pricing adjustments (Attorney General Brief at 25-26).

According to the Attorney General, the Department should disregard Alliance's criticisms with respect to the comparison of PPA-1 to other offshore wind facilities in the United States (Attorney General Reply Brief at 3-7). According to the Attorney General, Alliance incorrectly concludes that her analysis is faulty because it assumes that the other offshore projects in the United States will begin commercial operation in 2013 (Attorney General Reply Brief at 3-4). Instead, she claims that her comparisons are valid because all contracts with offshore wind facilities in the United States were adjusted to 2013 dollars (Attorney General Reply Brief at 3-5). Accordingly, the Attorney General urges the

Department to disregard Alliance's argument that PPA-1 is overpriced and to find instead that PPA-1 is consistent with prices for comparable offshore wind projects in the United States (Attorney General Reply Brief at 5).

The Attorney General asserts that the European projects serve only as a benchmark for evaluating PPA-1 because those projects are not directly comparable to projects in the United States (Attorney General Brief at 26; Attorney General Reply Brief at 7). The Attorney General states that there are several factors that make a direct comparison between the Cape Wind facility and foreign projects imperfect, including: (1) subsidies from different countries and localities that reduce development costs; (2) different environmental or other local scrutiny, making projects less costly to site in some areas than others; (3) a more mature European offshore wind market which may allow some developers to reduce their project costs by purchasing materials and equipment in large quantities, and by outsourcing operations and maintenance services in large volumes; (4) different transportation costs, because most of the larger equipment such as turbines and blades are currently manufactured in Europe; and (5) the complexities associated with varying exchange rates which have fluctuated substantially over the past several years (Exh. AG-JWJC at 40-41).

The Attorney General argues that in comparison to European offshore wind projects, the base price of PPA-1 is slightly more expensive yet is still within a reasonable range (Attorney General Brief at 26; Exh. AG-JWJC-1, at 38-40). The Attorney General contends that Alliance's comparison of PPA-1 prices to the "average" cost of European offshore wind projects is inappropriate because the average cost does not factor in any European market

drivers or real differences in cost that will vary over time (Attorney General Reply Brief at 5-6; Exh. AG-JWJC-1, at 40-41). According to the Attorney General, even in Europe the average reflects a relatively small sample of very different projects and the costs of the projects can vary widely, which is illustrated by the range of adjusted costs of \$1.3 million per MW to \$4.8 million per MW for European offshore wind projects (Attorney General Reply Brief at 6; Exh. AG-JWJC-1, at 39-41).

The Attorney General also disputes Alliance's criticism that her analysis is skewed because European projects are ineligible for the ITC and the United States Treasury grant (Attorney General Reply Brief at 6-7). The Attorney General argues that European offshore wind projects may be eligible for incentives and subsidies that Cape Wind cannot receive, which could increase or decrease European project costs (Attorney General Reply Brief at 7; Exh. AG-JWJC-1, at 39-41).

iv. Alliance to Protect Nantucket Sound

Alliance argues that the Attorney General's comparison of the Cape Wind facility to offshore wind projects in the United States and Europe is fundamentally flawed and misleading (Alliance Brief at 20-22). With regard to the comparison of PPA-1 to offshore wind projects in the United States, Alliance contends that such comparison is inappropriate because other offshore wind projects in the United States will not begin commercial operation until many years after the Cape Wind facility is operational (Alliance Brief at 20-21). According to Alliance, if prices are higher in the future, then comparable projects should be more expensive than Cape Wind, rather than similarly priced (Alliance Brief at 21).

With regard to the comparison of PPA-1 to European offshore wind projects, Alliance claims that the Cape Wind facility is 70 percent more expensive than a comparable European project (Alliance Brief at 21). Alliance further alleges that the Attorney General's analysis fails to account for the fact that the European projects are ineligible for the ITC and federal tax grant and the fact that Cape Wind will not pay any local or state property taxes as a project located in federal waters (Alliance Brief at 21-22).

v. CLF et al.

CLF et al. explain that the reasonableness of PPA-1 is reflected by its price terms, which are comparable to, or better than, the contract terms for other proposed offshore wind energy projects (CLF et al. Brief at 38). CLF et al. contend that the evidence presented by the Attorney General and Cape Wind shows that the pricing of PPA-1 is consistent with the pricing of other offshore wind projects (CLF et al. Brief at 38-40).

vi. Department of Energy Resources

DOER argues that, based on the record, the pricing of PPA-1 compares favorably to other offshore wind projects (DOER Brief at 44). According to DOER, the Attorney General conducted a thorough analysis and concluded that the price of PPA-1 is comparable to the prices of other proposed offshore wind projects in the United States and within the range of expected costs from projects outside of the United States, before making an adjustment for depth of water and distance to shore (DOER Brief at 18). In addition, DOER asserts that Cape Wind conducted a separate analysis that resulted in an even more favorable comparison of the Cape Wind facility to projects in the United States and in Europe (DOER Brief at 18).

c. Analysis and Findings

The various analyses performed by the Attorney General and Cape Wind demonstrate that the price terms of PPA-1 are reasonable compared to proposed offshore wind projects in the United States and to existing and proposed offshore wind projects abroad. We discuss the analyses below.

With respect to domestic offshore wind projects, Table 8, below, sets forth the calculations by the Attorney General and Cape Wind of the levelized contract prices for PPA-1, Bluewater Wind, and Deepwater Block Island. The Attorney General adjusted the Bluewater contract to the terms of PPA-1; Cape Wind did the opposite, extending PPA-1 to the duration of the Bluewater contract. These are the only publicly available contracts for offshore wind projects in the United States (Exh. AG-JWJC-1, at 30-31, 33, 38).

Table 8: Comparison of United States Offshore Wind Contracts²⁰⁹

Contract	Attorney General Analysis²¹⁰ Levelized Price (\$/MWh)	Cape Wind Analysis²¹¹ Levelized Price (\$/MWh)
PPA-1	\$230	\$214
Bluewater, Delaware	\$230	\$235
Deepwater Block Island, Rhode Island	\$340	n/a

²⁰⁹ Sources: Exhs. CW-RBS-9, at 41; CW-RBS-11; AG-JWJC-1, at 33, 36.

²¹⁰ Note: the Attorney General adjusted the Bluewater and Deepwater Block Island contracts to the terms of PPA-1 (Exh. AG-JWJC-1, at 33-36).

²¹¹ Note: Cape Wind adjusted PPA-1 to have the same duration as the Bluewater contract (Exh. CW-RBS-9, at 37-38).

The Attorney General's analysis demonstrates that the adjusted levelized price of the Deepwater Block Island contract far exceeds the levelized price of PPA-1. As noted by the Attorney General, this is to be expected given that the nameplate capacity of the 28.8 MW Deepwater Block Island facility is only six percent of the nameplate capacity of the 468 MW Cape Wind facility, presumably providing the Deepwater Block Island facility with fewer economies of scale (Exh. AG-JWJC at 33-34). Nevertheless, the Deepwater Block Island contract represents a significantly higher price per MWh than PPA-1.

The Bluewater contract is a more useful comparison with PPA-1 for three reasons (see Exh. CW-RBS-9, at 34-36). First, the Bluewater contract is for the purchase of energy, capacity, and RECs -- the same three products as PPA-1. Second, the contract was selected through a competitive bidding process, which provides some assurance that the prices are reasonable compared to other resources available to Delmarva (Exh. CW-RBS-9, at 35). Finally, the contract was reviewed and approved by the Delaware Public Utilities Commission (Exh. CW-RBS-9, at 35).²¹²

Both the Attorney General and Cape Wind compared PPA-1 to the Bluewater contract. The Attorney General calculated an adjusted levelized price for the Bluewater contract with terms similar to PPA-1. Cape Wind calculated an adjusted levelized price for PPA-1 with terms similar to those of Bluewater. The Attorney General took a more conservative approach

²¹² In the Matter of Integrated Resource Planning for the Provision of Standard Offer Supply Service by Delmarva Power & Light Company under 26 DEL. C. §1007(c) & (d): Review and Approval of the Request for Proposals for the Construction of New Generation Resources under 26 DEL. C. § 1007(d), De. Pub. Serv. Comm'n, No. 06-241 (September 2, 2008).

than Cape Wind toward valuing the additional REC revenues that Bluewater might receive. Also, to facilitate the Bluewater contract comparison with PPA-1, Cape Wind assumed that revenues during the ten-year period after the contract term should be at cost-plus prices, which leads to a lower net present value of revenues and, by extension, a lower estimate of the adjusted PPA-1 levelized price in relation to the Attorney General's estimate.

We find that the Attorney General's assumptions are reasonable and that her method appropriately estimates the revenues that Bluewater may realize. We do not agree with Alliance's claims that the manner in which the Attorney General calculated the price adjustments to account for differences in the terms of the two contracts is flawed because it does not accurately take into account the difference in the projects' expected commercial operation dates (Alliance Brief at 20-21).²¹³ Instead, we find that the manner in which the Attorney General made these adjustments and the assumptions included therein are reasonable and are not likely to introduce material bias into the results. Accordingly, the Department will rely on the Attorney General's comparison of PPA-1 to the Bluewater contract in making our findings here. Although we do not disregard it completely, we give less weight to the Cape Wind analysis because its assumptions are less reasonable.²¹⁴

²¹³ Specifically, the initial Bluewater contract price is expressed in 2007 dollars. After making the REC and capacity adjustments, the Attorney General's analysis uses an escalation rate of 2.5 percent to express the adjusted initial contract prices in 2013 dollars. The analysis then calculates a levelized price for the Bluewater contract using a discount rate of seven percent (Exh. AG-JWJC-1, at 35).

²¹⁴ The Attorney General's analysis enables the comparison between estimated facility costs and a revenue requirement for the developer with reasonable financing assumptions. Her bases for estimating installed costs and projected operations and

Accordingly, the Department finds that the Attorney General's and Cape Wind's analyses of other domestic offshore wind projects and, in particular, the Attorney General's analysis of the Bluewater contract, demonstrate that the PPA-1 price is reasonable. In addition, the Department finds that the Attorney General's analysis of the confidential domestic offshore wind project further demonstrates the reasonableness of the price of PPA-1 (Exhs. AG-NG-4-3; AG-JWJC-1 at 31-32, 37; APNS-AG-1-1 (Att.); Tr. 11 at 2331-2335 (Confidential)).

With respect to foreign offshore wind projects, as recognized by the Attorney General and Cape Wind, there are a plethora of factors that make a direct comparison between the Cape Wind facility and foreign offshore wind projects difficult, including: (1) subsidies from different countries and localities that reduce development costs; (2) fluctuating exchange rates; (3) different environmental or other local scrutiny; and (4) differences in the maturity of the offshore wind industry in each country where the project is located (Exhs. AG-JWJC-1, at 40-41; CW-RBS-9, at 45-46). While these factors make a direct comparison of offshore wind facilities difficult to make, they do not eliminate the value of establishing these comparisons as benchmarks.

maintenance expenses are sourced from reputable reports and her estimates have not been challenged. The Attorney General's method for analyzing the potential revenues and expenses of the Cape Wind project represents an accurate model of the economics of project finance. Her discounted cash flow analysis incorporates the useful life of the facility and uses conservative assumptions regarding the post-PPA market revenues for capacity and RECs, which are based upon the price forecast that the Department has found to be the most credible in this proceeding.

Cape Wind and the Attorney General differed significantly in their approaches to evaluating the foreign offshore wind projects. The Attorney General used cost information for 25 foreign offshore wind projects and compared the range of costs for those projects to the project costs it estimated for the Cape Wind facility. In contrast, Cape Wind evaluated prices paid to offshore wind projects in Ontario, Canada, and several European countries, and compared those prices to PPA-1 prices. Both methods are credible and establish that the estimated costs of Cape Wind and prices of PPA-1 are reasonable when compared to the prices available to offshore wind projects in foreign markets. The following table summarizes the results of the evaluations by the Attorney General and Cape Wind.

Table 9: Comparison to Foreign Offshore Wind Projects²¹⁵

	Attorney General Analysis Installed Cost (\$/MW)	Cape Wind Analysis Levelized Price (\$/MWh)
PPA-1	\$5.6 million	\$214
Foreign Prices/Costs	\$1.3 million to \$4.8 million ²¹⁶	\$177 to \$263

The Attorney General compiled installed costs for 25 offshore wind facilities in foreign countries for which cost information was publicly available. She adjusted the costs of the foreign projects to account for differences between the projects and the Cape Wind facility in

²¹⁵ Sources: Exhs. CW-RBS-9, at 41, 44-45; CW-RBS-13; CW-RBS-14; AG-JWJC-1 at 39; AG-JWJC-7.

²¹⁶ Note that the range of installed costs for foreign offshore wind projects has been adjusted for depth of water and distance from shore (Exhs. AG-JWJC-1, at 39 n.29; AG-JWJC-7).

terms of distance from the shore and average water depth (Exhs. AG-JWJC-1, at 39; AG-JWJC-7). The Department does not accept Alliance's argument that the Attorney General's analysis is flawed because it fails to adjust the costs of the foreign projects to account for advantages available to the Cape Wind project but not to European facilities, including Cape Wind's ability to receive the federal ITC and its exemption from local and state property taxes (Alliance Brief at 21). Foreign facilities are eligible for certain incentives and the Attorney General's analysis likewise does not adjust the Cape Wind facility's costs for advantages available to projects in foreign countries and not to Cape Wind.

As shown in Table 9, above, the results of the Attorney General's analysis show that her estimated costs for the Cape Wind facility, \$5.6 million per MWh, are above the range of adjusted costs for the foreign offshore projects, \$1.3 million to \$4.8 million. The Attorney General states that her analysis demonstrates that while the cost of the Cape Wind facility is slightly higher than of the foreign projects, it is still within a reasonable range (Attorney General Brief at 26). In contrast, Alliance argues that the installed cost of the Cape Wind facility is 70 percent higher than the average cost of the facilities included in the analysis (i.e., \$3.3 million per MW) (Alliance Brief at 14).

It is reasonable to expect that, because of the nascence of the offshore wind industry in the United States, the costs to build and operate a facility such as Cape Wind will be higher than those of projects in more mature markets such as exist in Europe (Tr. 11, at 2215-2216). As the Attorney General notes, the more experienced offshore wind market allows developers in Europe to reduce their project costs by purchasing materials and equipment in large

quantities, and by outsourcing operations and maintenance services in large volumes (Exh. AG-JWJC-1 at 40-41). In addition, these developers likely face lower transportation costs because most of the larger equipment such as turbines and blades are currently manufactured in Europe (Exh. AG-JWJC-1 at 40-41). In light of all of these factors, the Department concludes that the estimated costs of the Cape Wind facility are within the range of reasonableness when compared to the costs of foreign offshore wind projects.

Additionally, Cape Wind calculated the prices available to offshore wind projects in Ontario, Canada and European markets by (1) identifying the pricing arrangements that exist in those markets, (2) adjusting the prices in those markets where transmission cost subsidies are available to offshore projects, and (3) converting the pricing arrangements to 25-year terms (Exhs. CW-RBS-9, at 41-44; CW-RBS-14). The results of Cape Wind's analysis establish that the adjusted levelized price of PPA-1 is well within the range of levelized prices adjusted in this fashion for the evaluated foreign offshore projects, \$177 per MWh to \$263 per MWh.

The Department finds that the method by which Cape Wind adjusted the pricing arrangements for differences in the treatment of transmission costs is appropriate and allows for a useful comparison between pricing in the foreign markets and PPA-1. This is because Cape Wind calculates the adjustment factor based on the relationship between the transmission component of the PPA-1 price and its total price, and applies it uniformly to those markets where transmission subsidies exist (Exh. CW-RBS-9, at 42). We similarly find that the method by which Cape Wind established uniform terms for the various pricing arrangements is appropriate and allows for a useful comparison between pricing in the foreign markets and

PPA-1. To establish uniform terms for the payments following initial pricing mechanisms for the foreign offshore wind projects, Cape Wind applies the cost-plus pricing (similar to what would be paid under PPA-1 if extended) calculated by the Attorney General for the Cape Wind project (Exhs. CW-RBS-9, at 43-44). As Cape Wind explains, this pricing arrangement is a conservative estimate of the payments that would follow the initial pricing mechanisms because it represents the lowest payment stream sufficient to compensate a developer for operating and maintaining a project (Exh. CW-RBS-9, at 43-44).

Based on our review of Cape Wind's analysis, the Department concludes that the prices included in PPA-1 are in the range of reasonableness when compared to the prices available to offshore wind projects in foreign markets (see Exhs. CW-RBS-13; CW-RBS-14).

d. Conclusion

The Department concludes that the price of PPA-1 is reasonable compared to prices of offshore wind projects in development in the United States, based on the results of the Attorney General's analysis of the pricing for three offshore wind projects in the United States. In addition, we conclude that the cost of the Cape Wind facility and the price of PPA-1 are reasonable compared to offshore wind projects in other countries, based on the Attorney General's analysis of the costs of 25 offshore wind projects in foreign countries and on Cape Wind's analysis of the pricing mechanisms in eight foreign countries.

5. Conclusion

Our analysis above leads us to the following conclusions: (1) ratepayers will be protected against paying excessive rates of return to the Cape Wind project's developers by

virtue of PPA-1's Cost Adjusted Price provision; (2) the price of PPA-1 is reasonable for an offshore wind project, based on the Attorney General's estimate of the project's likely costs; and (3) the price of PPA-1 is reasonable relative to the price and costs of other domestic and foreign offshore wind projects. Although PPA-1 is more expensive than certain Section 83-eligible alternatives, we have concluded that the price is reasonable in light of the type of resource that it is and the benefits it offers and, further, that the price does not include excessive profits for the developers. In sum, the Department finds that National Grid's decision to pay the price terms of PPA-1 in order to procure the power from an offshore facility such as Cape Wind is reasonable and appropriate.

D. Evaluation of Contract Size

1. Introduction

In order to further determine whether PPA-1 is in the public interest, the Department must also assess the reasonableness of National Grid's entering into a contract of its size. As described in Section III.C., above, PPA-1 obligates National Grid to purchase 50 percent of the output of the Cape Wind facility, up to a maximum of 234 MW in the first instance (PPA-1, § 4.1). Based on changes to the size of the facility, National Grid's maximum purchase obligation could range from 50 percent of the facility's output (if it retains its proposed nameplate capacity of 468 MW) to 80 percent of the facility's output (if its nameplate capacity is reduced to 292.5 MW) (PPA-1, § 4.10). If the nameplate capacity of the facility is less than 292.5 MW, National Grid's maximum purchase obligation shall be equal to 80 percent of the facility's output (PPA 1, § 4.10; Exh. NG-MNM at 4 (Supp.); Tr. 3, at 498-500).

National Grid estimates that 234 MW of output, or about 760,000 MWh, is equivalent to approximately 3.5 percent of the Company's demand (based on 2008 figures) (Exhs. NG-MNM at 14; NG-JAL-4-R at 1). At 3.5 percent, the Company's purchasing obligation under PPA-1 would exceed the three percent obligation contained in Section 83²¹⁷ (Exhs. NG-MNM at 14). Accordingly, we must also address whether the three percent obligation contained in Section 83 represents a cap on the amount of energy electric distribution companies can procure under Section 83.

2. Positions of the Parties

a. National Grid

National Grid contends that Section 83 unambiguously does not cap the amount for which a distribution company may contract but rather sets the maximum amount of the obligation at three percent (National Grid Reply Brief at 17-18). The Company states that AIM's argument that Section 83 is a pilot program and that distribution companies are legally precluded from exceeding three percent of their load under Section 83 contracts is only tenable if the words "be obligated to" were removed from the statutory text (National Grid Reply Brief at 17, quoting St. 2008, c. 169, § 83, ¶ 4). National Grid further argues that the Department should not consider the secondary sources offered by AIM²¹⁸ in determining

²¹⁷ Section 83, ¶ 4 states in pertinent part, "Distribution companies shall not be obligated to enter into long-term contracts under this section that would, in the aggregate, exceed [three] per cent of the total energy demand from all distribution customers in the service territory of the distribution company."

²¹⁸ These secondary sources include: Exhs. AIM-1 (CLF, Bill Summary of § 2768, Green Communities Act); AIM-2 (Massachusetts Joint Committee on Telecommunications,

whether Section 83 contains a cap because the plain meaning of Section 83 controls (National Grid ReplyBrief at 18, citing, e.g., 457 Mass. at 496 (2010)).

b. Cape Wind

Cape Wind argues that Section 83 does not contain a three percent ceiling on what a distribution company can procure under Section 83 (Cape Wind Reply Brief at 24). Cape Wind asserts that interpreting Section 83 as containing such a cap contradicts the plain words of the statute and requires reading the phrase “ ‘shall not be obligated to’ ” to mean the same as “shall be prohibited” from (Cape Wind Reply Brief at 23-24, citing Section 83, ¶ 4; Providence & Worcester R.R. Co. v. Energy Facilities Siting Bd., 453 Mass. 135, 141 (2009)). Cape Wind also contends that the record establishes that Department approval of PPA-1 is needed in order to facilitate the financing of the facility (Cape Wind Brief at 13 n.13, citing Exhs. CW-DJD-1, at 9, 30, 32; CW-RBS-1, at 5; Tr. 1, at 140, 210).

c. Associated Industries of Massachusetts

AIM argues that the plain language of Section 83 imposes a three percent cap on the amount of power distribution companies can procure under Section 83 (AIM Brief at 10-11). AIM contends that if there were no cap, the goals of the Electric Restructuring Act would be

Utilities, and Energy, legislative summary of Green Communities Act); AIM-3 (Environment Northeast, Massachusetts 2008 Energy Bill); AIM-4 (Ken Kimmell & Laurie Burt, Massachusetts Takes on Climate Change, 27 UCLA J. Env'tl. Law. & Pol'y 295 (2009)); AIM-5 (Massachusetts Executive Office of Energy and Environmental Affairs, Press Release: Department of Energy Resources Coordinates Solicitation for Long-term Renewable Energy Contracts by Electric Utilities (2010)); AIM-9 (Susan F. Tierney & Todd Schatzski, Competitive Procurement of Retail Electricity Supply: Recent Trends in State Policies and Utility Practices, Analysis Group (2008)).

weakened because a distribution company could use Section 83 to acquire large amounts of supply outside of the competitive market and, thus, at above-market prices (AIM Brief at 11). AIM asserts that in enacting the Green Communities Act, the Legislature had no intention of significantly modifying the Restructuring Act but, instead, intended Section 83 to be a highly limited and controlled pilot program designed to explore the acquisition of renewable resources (AIM Brief at 13-14). In support of this argument, AIM references provisions of Section 83 setting forth a five-year duration for the program and requiring an annual review by DOER (AIM Brief at 12, citing Section 83, ¶¶ 1, 4, 8). Finally, AIM argues that the Legislature's intent to make Section 83 a limited, pilot program is further evidenced by stakeholder commentary written contemporaneously with the passage of the Green Communities Act (AIM Brief at 12-14, citing Exhs. AIM-1, at 2; AIM-2, at 6; AIM-3, at 2; AIM-4, at 6; AIM-5, at 1; AIM-9, at 2).

d. Alliance to Protect Nantucket Sound

Alliance contends that because Section 83 imposes a three-percent obligation on distribution companies, Department approval of PPA-1 would result in National Grid's fulfilling its entire Section 83 contracting obligation with one resource (Alliance Brief at 37). Alliance argues that National Grid is not likely to enter into any additional Section 83 contracts if the Cape Wind PPAs are approved, which may result in lower priced renewable resources being sold to other distribution companies or out of state to the disadvantage of National Grid's ratepayers (Alliance Brief at 38). Alliance also asserts that Cape Wind's novelty and large size

would subject ratepayers to increased supply risk and higher costs, and that contracting with multiple, smaller generators would be more advantageous to ratepayers (Alliance Brief at 38).

e. CLF et al.

CLF et al. argue that the plain language of Section 83 is clear that three percent is a cap only on the extent to which distribution companies are obligated to enter into long-term contracts, and that distribution companies are authorized, on a voluntary basis and subject to Department approval, to enter into contracts for a greater proportion of their electric loads (CLF et al. Reply Brief at 2-3, citing Section 83; 220 C.M.R. § 17.08(5)). If the Legislature intended to set a cap, CLF et al. contend that it would have instead written Section 83 to say that distribution companies “shall not enter into long-term contracts that would exceed [three] percent of load” (CLF et al. Reply Brief at 3). CLF et al. assert that interpreting the statute as containing a cap would inappropriately ignore the language regarding the extent of the “ ‘obligation’ ” to enter into long-term contracts as well as the language allowing distribution companies to “‘voluntarily’” enter into contracts exceeding three percent of their load (CLF et al. Reply Brief at 3 & n.2, citing St. 2008, c. 169, § 83, ¶ 4; Commonwealth v. Vega, 449 Mass. 227, 231 (2007); Comm’r of Corr. v. Superior Court Dep’t of the Trial Court, 446 Mass. 123, 124 (2006)).

f. Department of Energy Resources

DOER argues that while Section 83 sets a cap on the amount of demand a distribution company is obligated to meet through Section 83 long-term contracts, it does not limit the amount a company can voluntarily obtain, subject to the approval of the Department (DOER

Reply Brief at 6). DOER contends that interpreting Section 83 to cap a company's ability to enter into contracts requires ignoring the language " 'be obligated to[,] ' " which is an impermissible manipulation of the statute's plain language (DOER Reply Brief at 6, quoting St. 2008, c. 169, § 83).²¹⁹ DOER also argues that the Legislature's intent that Section 83 not contain a cap is clear in the context of Section 83 as a whole (DOER Reply Brief at 6). According to DOER, because the Legislature has struck a careful balance between delineating precise obligations on distribution companies and leaving some matters to the distribution companies' discretion, it cannot reasonably be argued that the statutory language " 'shall not be obligated to' " means "shall not" (DOER Reply Brief at 6-7, quoting St. 2008, c. 169, § 83, ¶ 4). Finally, DOER argues that AIM's and TransCanada's reliance on secondary resources to substantiate their arguments is misplaced because the plain language of the statute is unambiguous, and also because these secondary sources do not indicate that Section 83 imposes a cap (DOER Reply Brief at 7, citing 457 Mass. at 496).

g. TransCanada

TransCanada argues that Section 83 plainly imposes a three percent cap on the amount for which a distribution company can contract (TransCanada Brief at 6, citing Section 83, ¶ 4). In support of its argument, TransCanada references an article co-authored by the general counsel for the Massachusetts Executive Office of Energy and Environmental Affairs, which

²¹⁹ Citing Section 83, ¶ 4; Global NAPs, Inc. v. Awiszus, 457 Mass. 489, 496 (2010); Inter'l Org. of Masters, Mates, and Pilots, Atlantis and Gulf Maritime Region, AFL-CIO v. Woods Hole, Martha's Vineyard and Nantucket S.S. Auth., 392 Mass. 811, 813 (1984).

states that the Green Communities Act “sets up a pilot project that requires utilities to enter into long-term contracts (ten to [15] years) for renewable capped at [three] percent of utility load” (TransCanada Brief at 6-7, quoting Exh. AIM-4, at 6)).

3. Analysis and Findings

As an initial matter, we must address whether the three percent obligation contained in Section 83 represents a cap on the amount of energy electric distribution companies can procure under Section 83. The statutory language in question states as follows:

Distribution companies shall not be obligated to enter into long-term contracts under this section that would, in the aggregate, exceed [three] per cent of the total energy demand from all distribution customers in the service territory of the distribution company.

Section 83, ¶ 4. The plain meaning of this statutory language is clear: it obligates each distribution company to enter into long-term contracts for three percent of its total energy demand (provided a company receives reasonable proposals) but does not preclude a company from exceeding that level, subject to all of the requirements set forth in Section 83. Where the statutory language is unambiguous, we need not consider extrinsic information such as the documents referenced by AIM and TransCanada in order to ascertain the Legislature’s intent, as the Legislature’s intent is clear from the words of the statute.²²⁰

²²⁰ See Pyle v. Sch. Comm. of Hadley, 423 Mass. 283, 285-286 (1996) (“Where the language of a statute is clear and unambiguous, it is conclusive as to legislative intent.”), citing Boston Neighborhood Taxi Ass’n v. Dep’t of Pub. Utils., 410 Mass. 686, 690 (1991); Bronstein v. Prudential Ins. Co., 390 Mass. 701, 704 (1984) (“When the use of the ordinary meaning of a term yields a workable result, there is no need to resort to extrinsic aids such as legislative history.”).

That Section 83 does not contain a cap on the amount of energy a distribution company can procure through long-term renewable contracts does not undermine the Electric Restructuring Act, as argued by AIM (AIM Brief at 11). Section 83 does not provide a distribution company with unbridled authority to enter into long-term contracts for renewable energy. As we have said in Section V, the Department will approve a long-term contract filed pursuant to Section 83 only if the contract is cost-effective and in the public interest. Section 83 provides the Department with the discretion to determine whether contracts in excess of three percent of a distribution company's energy demand should be approved. St. 2008, c. 169, § 83, ¶ 2 (requiring all proposed contracts to be reviewed and approved by the Department).

Having determined that Section 83 permits a distribution company to enter into contracts that exceed three percent of its total energy demand, we must now consider whether it is reasonable for National Grid to purchase up to 234 MW of electricity from Cape Wind. The fundamental purpose of Section 83's long-term contracting obligation is to facilitate the financing of renewable energy projects. See St. 2008, c. 169, pmbl; see D.P.U. 10-58-A at 14-15. There is no prescriptive standard regarding the percentage of output from a renewable energy facility that must be under long-term contract in order to obtain financing (see Exhs. DPU-NG-8-10; AG-CW-3-1).

Here, the record shows that it is necessary for National Grid to enter into a contract of this size in order to facilitate the financing of the Cape Wind facility. The terms of PPA-1 will likely enable Cape Wind to obtain financing at both ends of the range of output-percentage

scenarios (i.e., 50 percent of a 468 MW facility or 80 percent of a 292.5 MW facility) (Tr. 3, at 511-512). Contracting for less than this amount could endanger Cape Wind's ability to obtain financing (Tr. 3, at 540; Tr. 5, at 1068-1070, 1090; Tr. 12, at 2511).

In addition to financing considerations, National Grid states that it took into consideration other factors in determining the appropriate contract size such as: (1) achieving a proper balance in its portfolio of energy contracts; (2) ensuring that the percent of output purchased would not jeopardize its required accounting treatment; and (3) ensuring that the contract would not have an undue impact on ratepayers (Tr. 5, at 1068-1070). However, Alliance argues that, by entering into a contract of this size, National Grid's customers and other renewable energy developers may be deprived of the benefits of National Grid entering into other contracts pursuant to Section 83 (Alliance Brief at 37-38).

National Grid has represented that it will continue to participate in renewable energy solicitations pursuant to Section 83 and, with Department authority, may enter into additional Section 83 contracts if it is in its customers' interest to do so (Tr. 12, at 2511). The Department is cognizant of the costs associated with PPA-1. As we have determined above, PPA-1 is both cost-effective to National Grid's customers over the term of the contract and reasonable as compared to other Section 83-eligible resources (see Sections VII.E, VIII.A, above). In addition, as we discuss below, we find that the bill impacts for National Grid customers of PPA-1 are reasonable (see Section VIII.B, below). For all these reasons and because National Grid has demonstrated that a long-term contract of the size of PPA-1 is necessary to facilitate the financing of the Cape Wind facility and despite the large amount of

energy being purchased, we find that the size of the contract is reasonable. Further, we find that a long-term contract in excess of three percent of National Grid's energy demand is appropriate under the circumstances. See St. 2008, c. 169, § 83.

E. Analysis of Bill Impacts

1. Introduction

One of the Department's critical considerations in assessing the public interest of a long-term contract is whether its bill impacts are reasonable in light of its benefits. National Grid provides an illustrative analysis of bill impacts that are likely to occur in 2013, assuming that 2013 is the first full year of payments under PPA-1 (Exhs. NG-JAL (Supp.) at 2; NG-JAL-5 (Supp.)). The Company estimates bill impacts for each rate class and for a range of different consumption levels within each rate class (Exh. NG-JAL-5 (Supp.)).

The Company first estimates bills without PPA-1 ("current bills") by rate class and consumption level, and then estimates what new bills would be if retail delivery rates were increased by the estimated Renewable Energy Recovery Factor ("RERF") ("proposed bills"). The RERF for 2013 includes the Company's estimate of 2013 above-market costs of \$51.2 million plus the Company's estimate of 2013 contract remuneration costs of \$5.7 million. These costs are divided by the 2013 forecast electricity delivery sales of 22,916 GWh, to arrive at an estimated RERF of \$0.00248 per kWh for 2013 (Exhs. NG-JAL (Supp.) at 2; NG-JAL-4 (Supp.)). National Grid's bill impact analysis does not include any price suppression effects (Exh. NG-MNM at 26-28).

Table 10 below presents a summary of the Company's bill impact analysis, focusing on typical customers (i.e., customers with typical consumption levels) for each rate class. A typical residential customer using 500 kWh of electricity per month currently has an electric bill of \$73.22. The direct impact of PPA-1 will be to increase the typical residential customer's monthly bill by \$1.24, or 1.7 percent. Generally, large commercial and industrial ("C&I") customers will see slightly higher bill increases than other customers because a smaller portion of their bill is due to fixed charges. A large C&I customer using 800 kW and 280 MWh of electricity per month could expect its monthly bill to increase by roughly \$696, or 2.2 percent.

Table 10: Estimated Monthly Bill Impacts of PPA-1 on National Grid's Customers (without Price Suppression)²²¹

Rate Class	Typical Consumption (kWh)	Current Bill	Proposed Bill	Monthly Bill Impact (\$ and %)	
Residential (R1)	500 kWh	\$ 73.22	\$ 74.46	\$ 1.24	1.7%
Low Income (R2)	500 kWh	\$ 53.99	\$ 54.92	\$ 0.93	1.7%
Small C&I (G1)	1,500 kWh	\$ 213.61	\$ 217.33	\$ 3.72	1.7%
Medium C&I (G2)	18,750 kWh	\$ 2,398.76	\$ 2,445.26	\$ 46.50	1.9%
Large C&I (G3)	280,000 kWh	\$ 32,276.17	\$ 32,971.97	\$ 695.80	2.2%

2. Positions of the Parties²²²

a. Cape Wind

Cape Wind notes that the bill impact on a typical residential customer as calculated by the Company represents an upper bound (Cape Wind Brief at 9 & n.10). Further, Cape Wind argues that the impact would be completely negated by a return to historical escalation in electric rates, fully realized price suppression effects, or a realization of any price adjustments included in the amended PPA-1 (Cape Wind Brief at 9 n.10).

b. Attorney General

The Attorney General does not explicitly support or challenge the calculation of bill impacts provided by the Company. She notes, however, that the impact of the amended PPA-1 on an average residential customer using 500 kWh per month is an increase of 1.7 percent

²²¹ Source: Exhs. NG-JAL (Supp.) at 2; NG-JAL-5; NG-JAL-5 (Supp.). The Department selected the typical consumption levels presented here to represent those levels associated with the greatest number of customers within each class. Consumption levels can vary significantly within customer classes, particularly the G2 and G3 C&I classes.

²²² National Grid did not address its bill impact analysis on brief.

compared with an increase of 2.2 percent for the original PPA-1 (Attorney General Brief at 13-14, citing Exhs. NG-JAL-4; NG-JAL-4 (Supp.)).

c. Alliance to Protect Nantucket Sound

Alliance argues that a rate impact analysis for the procurement of energy that serves only 3.5 percent of National Grid's load is grossly misleading and irrelevant, stating that contracts for small amounts of energy at almost any price could be justified in terms of small bill impacts (Alliance Reply Brief at 15). Without accepting the Company's calculation of bill impacts as correct, the Alliance argues that a bill increase of 1.7 to 2.3 percent is enormous given that the contract represents a small proportion of the Company's entire distribution load represents (Alliance Reply Brief at 15). Alliance further notes that viewing the impact as a percentage masks the magnitude of the actual dollar impact that the Company's large C&I customers would realize (Alliance Reply Brief at 15). Additionally, Alliance argues that because approval of PPA-1 would establish an extraordinarily high benchmark price to be used in all future negotiations for long term contracts, future bill impacts also would be significant (Alliance Reply Brief at 16).

d. Department of Energy Resources

DOER provides three reasons why the impact of PPA-1 on ratepayer bills may be overstated: (1) the above-market costs are based on natural gas prices that are likely understated; (2) the above-market cost estimates do not include the value of the price adjustment provisions in the amended PPA-1; and (3) price suppression effects are real, are

significantly large, and will lower electricity bills in Massachusetts and New England (DOER Brief at 20, 31-33, 44; DOER Reply Brief at 7-8).

3. Analysis and Findings

The Department finds that the Company's method for calculating bill impacts is appropriate and that the estimates provide a reasonable approximation of the likely bill impacts in 2013. We recognize that the bill impacts could be slightly higher or lower depending upon the actual contract costs (including the potential applicability of various contract contingencies) and the actual PPA-1 above-market costs. Nonetheless, the method applied and the results obtained provide sufficient information for the Department to make a determination as to the reasonableness of the bill impacts of PPA-1.

The addition of the Cape Wind facility's output to the supply of energy in the Commonwealth will result in a reduction in the wholesale price of energy, as discussed in Section VII.D.3, above. The price suppression effect will mitigate the above-market costs of PPA-1 and the bill impacts presented in Table 10, above. National Grid recognizes that the benefits of price suppression from PPA-1 will be reflected in lower electricity supply costs, but the Company chose not to include the effect of price suppression in its bill impact analysis because the effect is difficult to quantify precisely (Exh. NG-MNM at 26-28).

The Department agrees that there are uncertainties regarding the magnitude of price suppression, particularly for any one year. Nonetheless, as noted above, we believe that the price suppression effect will reduce electricity costs to National Grid customers, as well as to other electricity customers in Massachusetts and New England. Furthermore, given the

amount of generation expected from the Cape Wind facility, we expect that the price suppression effect will be considerable. Therefore, we conclude that it is useful to include the price suppression effect in the bill impact analysis, to provide an illustration of how customer bills might be affected by the combination of above-market-costs and price suppression.

Table 11 below provides a summary of the National Grid customer bill impacts from PPA-1 including both above-market costs and price suppression. As indicated, the bill impacts are considerably lower with the price suppression effect included. A typical residential ratepayer would see a monthly bill increase of 1.3 percent, and a typical large C&I customer would see the highest bill impact of approximately 1.7 percent.

Table 11: Estimated Monthly Bill Impacts of PPA-1 on National Grid’s Customers Including Price Suppression²²³

Rate Class	Typical Consumption (kWh)	Current Bill	Proposed Bill	Monthly Bill Impact (\$ and %)	
Residential (R1)	500 kWh	\$ 73.22	\$ 74.17	\$ 0.95	1.3%
Low Income (R2)	500 kWh	\$ 53.99	\$ 54.32	\$ 0.33	1.3%
Small C&I (G1)	1,500 kWh	\$ 213.73	\$ 216.59	\$ 2.86	1.3%
Medium C&I (G2)	18,750 kWh	\$ 2,398.99	\$ 2,434.71	\$ 35.72	1.5%
Large C&I (G3)	280,000 kWh	\$ 32,276.17	\$ 32,809.57	\$ 533.40	1.7%

In addition, the price suppression effect of PPA-1 will provide benefits to all electricity customers in Massachusetts, including customers outside of National Grid’s service territory.

²²³ To calculate these bill impacts we use National Grid’s bill impact estimates presented in Table 11 above and then add the price suppression estimates from the ESAI “diminishing impact” case, which reduces electricity costs for National Grid customers by \$14.2 million in 2013, the equivalent of \$0.58 per MWh (RR-DPU-NG-4, at 1).

We estimate that the price suppression effects of PPA-1 will reduce the bills of Massachusetts electricity customers, other than those of National Grid, by roughly 0.5 percent.²²⁴

Further, we note that National Grid customers are likely to experience additional reductions in electricity costs if and when other electric distribution companies procure long-term contracts for renewable energy under the provisions of Section 83. It is likely that those contracts for renewable energy would have price suppression effects similar to PPA-1 and that those price suppression effects would be enjoyed by customers throughout Massachusetts, including National Grid customers. We estimate that the total impact of PPA-1 plus the price suppression effects from the procurement of Section 83 contracts by other distribution companies would be an increase to National Grid customers' bills of approximately 0.6 percent for small customers and 0.8 percent for large C&I customers.²²⁵ This is significantly lower than the projected increase of customers' bills of 1.7 percent to 2.2 percent in the absence of any price suppression effect.

²²⁴ To calculate these bill impacts we assume that other electricity distribution companies have similar rates and rate structures to National Grid's. We apply the per-MWh price suppression estimate for the ESAI "diminishing case," which is \$0.58 per MWh, to the current bills of National Grid's typical customers (RR-DPU-NG-4, at 1).

²²⁵ To calculate these impacts, we assume that each of the other three Massachusetts electricity distribution companies procures long-term contracts equal to three percent of its electric load, and that the price suppression effects of those resources is of comparable magnitude to the effects of PPA-1. This leads to a total statewide price suppression effect of \$1.61 per MWh (i.e., \$0.58 per MWh divided by 36 percent, which is National Grid's percentage of state electricity load) (RR-DPU-NG-4, Att. at 1, 2). This price suppression effect is then applied to National Grid's proposed bills, including PPA-1 costs, which are presented in Table 11.

The Department is cognizant of the need to keep electricity bills as low as possible, while simultaneously meeting the goals of maintaining safe, reliable electricity service and achieving other important public policy objectives. As described in Section VII, above, the Department finds that the benefits of PPA-1 to National Grid customers will be meaningful and significant. The bill impact analyses described above indicate that PPA-1 costs are likely to increase electricity customers' bills by a relatively small amount, on the order of one to two percent, especially when the price suppression effect is accounted for. We further note that the estimated bill impacts of PPA-1 are very small relative to the periodic swings in electricity prices that customers experience in their bills from the volatility of wholesale electricity prices, and that long-term contracts for renewable energy such as PPA-1 can serve to mitigate some of that wholesale-price volatility.²²⁶

The Department does not accept Alliance's contention that National Grid's bill impact analysis is meaningless because the energy procured through PPA-1 represents such a small amount of the energy purchased by the Company. While it is true that, mathematically, a high-cost resource will be likely to have only a small impact on customers' bills if it represents a small portion of energy purchases, this by no means renders the Company's bill impact analysis meaningless.

²²⁶ We note that, from January 2000 through November 2007, National Grid's residential basic service customers experienced a 68 percent increase in their total bills, almost entirely due to rising natural gas prices. From November 2007 through January 2010, the same customers experienced a twelve percent reduction in their total bills, again almost entirely as a result of declining natural gas prices. See Variable Monthly Service Default Rates, available at <http://www.mass.gov/dpu> (follow "Rates & Revenue Requirements Division"; "Basic/Default Service").

As described in Section V above, a long-term contract for renewable energy must be both cost-effective and in the public interest to receive Department approval. The purpose of the bill impact analysis is not solely to determine the cost-effectiveness of a contract for renewable energy, as asserted by Alliance (Alliance Reply Brief at 14). Instead, the purpose of the bill impact analysis is to provide a check to ensure that the bill impacts are not so high as to indicate that the contract is not in the public interest.

Further, the Department's analysis of bill impacts is not performed in the abstract but analyzed relative to the benefits of the contract. In making our findings on bill impacts, we are cognizant of those benefits, as we are cognizant of the mathematics underlying the bill impacts analysis and of the project size. Finally, the ultimate issue raised by Alliance in its critique of bill impacts — the high cost of PPA-1 relative to other renewable options — is addressed by the Department in Section VIII.A, above, where we conclude that the Cape Wind facility has a unique combination of attributes that will yield significant benefits, well in excess of other Section 83-eligible resources.

In light of the considerations above, the Department finds that the bill impacts of PPA-1 presented in Table 10 are reasonable, especially given the significant benefits that the contract offers to National Grid's customers.²²⁷ In addition, the price suppression effects of PPA-1 will reduce these bill impacts on National Grid customers.

²²⁷ The Department notes that the bill impacts after 2013 could be different from those presented above for 2013. We expect, however, that the bill impacts presented above for 2013 will be representative of the bill impacts for the near- to mid-term future as well. While contract costs are expected to rise each year, market value is also expected to rise each year. The above-market costs of PPA-1 (i.e., the combined effect of

F. Conclusion

In assessing whether PPA-1 is in the public interest, the Department has considered above four specific issues. First, we have considered whether it is appropriate for National Grid to procure renewable energy through PPA-1 given the availability of lower cost alternatives. We have determined that the Company appropriately identified and considered alternative Section 83-eligible resources in determining whether to enter into PPA-1. Moreover, considering the Cape Wind facility's costs and its unique set of attributes (i.e., the facility's size, capacity factor, location on the regional transmission system, and advanced stage of development), we have found that PPA-1 will provide benefits to National Grid's ratepayers that far exceed those that could be provided by other potential Section 83 contracts.

Second, we considered whether the pricing terms of PPA-1 are reasonable. The record indicates that the price of PPA-1 is consistent with the Cape Wind project's likely costs and is consistent with the price of comparable renewable energy projects proposed in the United States. Moreover, PPA-1 contains a provision that will reduce the price under PPA-1 if Cape Wind's IRR exceeds 10.75 percent. This provision provides significant, meaningful protection for ratepayers because it ensures that customers will not end up paying excessive rates of return to the Cape Wind project's developer or its investors.

contract costs and market value) are expected to remain relatively constant throughout much of the term of PPA-1 (Exh. NG-MNM-2 (Supp.)). Therefore, the impact on bills as a result of paying the above-market costs in these future years will be very similar to the bill impacts estimated for 2013. Similarly, the price suppression effects are expected to remain fairly constant for the near- to mid-term future (RR-DPU-NG-4). Consequently, even accounting for price suppression effects, the bill impacts are unlikely to change significantly after 2013.

Third, we have considered whether National Grid's purchase of renewable energy under PPA-1 in an amount equaling approximately 3.5 percent of the Company's electric load is reasonable. In order for Cape Wind to obtain financing and, thus, build the facility, it must have a buyer committed to purchase 50 percent of its output if the facility is built at 468 MW facility or 80 percent if the facility is built at 292.5 MW. Therefore, National Grid's purchase under PPA-1 will serve to facilitate the financing of the project, while providing significant benefits to ratepayers.

Finally, we have considered whether the bill impacts of PPA-1 to National Grid customers are acceptable. The bill impacts on National Grid customers as a result of the PPA-1 above-market costs are estimated to range from 1.7 percent to 2.2 percent. The bill impacts on National Grid customers are expected to be smaller when price suppression effects are accounted for. The Department finds that the bill impacts of PPA-1 are acceptable, especially given the significant benefits that the contract offers to National Grid customers. Therefore, for all of these reasons, the Department concludes that PPA-1 is in the public interest.

IX. COMPLIANCE WITH D.P.U. 10-58

A. Introduction

When National Grid filed its petition for approval of two long-term contracts with Cape Wind, Section 83 and the Department's implementing regulations limited the availability of long-term contracts to in-state renewable resources. The Department has since eliminated this provision to allow for solicitation for long-term contract proposals from in-state and out-of-state resources. Order Adopting Emergency Regulations on Long-Term Contracts for

Renewable Energy, D.P.U. 10-58 (2010); Order Adopting Final Regulations on Long-Term Contracts for Renewable Energy, D.P.U. 10-58-A (2010). In this section, the Department examines whether National Grid has complied with D.P.U. 10-58 and the emergency long-term contract regulations adopted therein. Also, the Department will address the second motion of Alliance to dismiss (“Second Motion to Dismiss”) National Grid’s petition because the Second Motion to Dismiss is premised on National Grid’s non-compliance with D.P.U. 10-58.

B. Background

As enacted, Section 83 requires each electric distribution company, beginning July 1, 2009, twice in a five-year period to “solicit proposals from renewable energy developers and, provided reasonable proposals have been received, enter into cost-effective long-term contracts to facilitate the financing of renewable energy generation within the jurisdictional boundaries of the [C]ommonwealth, including state waters, or in adjacent federal waters.” On June 12, 2009, the Department promulgated regulations, 220 C.M.R. § 17.00 et seq., implementing the long-term contracting provisions of Section 83. D.P.U. 08-88-A. These regulations, which were published as final in the Massachusetts Register on June 26, 2009, contained the geographic limitation set out in Section 83 (“2009 long-term contract regulations”).

On April 16, 2010, TransCanada brought a lawsuit against various state officials, including the commissioners of the Department, challenging the constitutionality of Section 83

and the 2009 long-term contract regulations on the basis that the statute and the regulations discriminate against out-of-state renewable energy generators.²²⁸

Section 83 provides in relevant part:

If any provision of this section is subject to a judicial challenge, the department of public utilities may suspend the applicability of the challenged provision during the pendency of the judicial action until final resolution of the challenge and any appeals, and shall issue such orders and take such other actions as are necessary to ensure that the provisions that are not challenged are implemented expeditiously to achieve the public purposes of this provision.

In accordance with Section 83, the Department issued an Order on June 9, 2010, suspending the applicability of the geographic limitation and amended the 2009 long-term contract regulations by removing from 220 C.M.R. § 17.01(1) the words “within the Commonwealth of Massachusetts, its waters, or adjacent federal waters.” D.P.U. 10-58, at 5. The Department also suspended the applicability of the geographic requirement in Section 83 that, where feasible, additional employment be created in the Commonwealth and similarly amended the 2009 long-term contract regulations by removing the words “in the Commonwealth of Massachusetts” from 220 C.M.R. § 17.05(1)(c)(4). D.P.U. 10-58, at 5. On August 20, 2010, the Department adopted the emergency long-term contract regulations as final without modification. D.P.U. 10-58-A.

In amending the 2009 long-term contract regulations and adopting the emergency long-term contract regulations, the Department recognized that there were matters already pending before the Department pursuant to the requirements of Section 83 and the 2009

²²⁸ The claims involving Section 83 and the 2009 long-term contract regulations have been stayed through May 31, 2011.

long-term contract regulations. D.P.U. 10-58, at 6. In particular, the Department had previously approved the Initial RFP, which was issued on January 15, 2010, by Fitchburg Gas and Electric Light Company d/b/a Unitil, National Grid, NSTAR Electric, and WMECo (together, “electric distribution companies”) and DOER.²²⁹ With respect to the Initial RFP, the Department directed the electric distribution companies in consultation with DOER to state how they intended to comply with the Department’s Order and emergency regulations. D.P.U. 10-58, at 6. Specifically, the Department required that the Initial RFP be opened for a reasonable period of time to allow eligible out-of-state bidders to submit proposals for long-term contracts for renewable energy and/or RECs to be delivered to Massachusetts electric distribution companies. D.P.U. 10-58, at 6.

In addition, the Department had already opened an investigation into the two long-term Cape Wind contracts, which National Grid filed on May 10, 2010, pursuant to Section 83 and the 2009 long-term contract regulations. Because the Cape Wind contracts were the product of individual negotiations rather than of the Initial RFP, the Department directed National Grid to demonstrate, in this proceeding, compliance with D.P.U. 10-58 and the emergency long-term contract regulations. D.P.U. 10-58, at 6.

On July 14, 2010, consistent with the Department’s directives in D.P.U. 10-58 and the emergency long-term contract regulations, the electric distribution companies and DOER

²²⁹ See D.P.U. 10-58, at 6. On December 29, 2009, the Department approved the timetable and method of solicitation and execution of long-term contracts for renewable energy contained in the Initial RFP that included the geographic limitation discussed above (i.e., limited to eligible in-state bidders). See Fitchburg Gas and Electric Light Company et al., D.P.U. 09-77 (2009).

jointly filed a request for approval of a Revised RFP, which among other things, allows eligible out-of-state bidders an opportunity to participate. On August 27, 2010, the Department approved the Revised RFP, finding that it appropriately implemented the directives in Order D.P.U. 10-58 and the emergency long-term contract regulations. Fitchburg Gas and Electric Light Company et al., D.P.U. 10-76, at 31 (2010).

On August 13, 2010, the Department dismissed three long-term renewable energy contracts proposed by NSTAR Electric (“NSTAR Electric contracts”) without prejudice, for failure to comply with the Department’s directives in D.P.U. 10-58. NSTAR Electric Company, D.P.U. 10-71/10-72/10-73, Order of Dismissal Without Prejudice (August 13, 2010). Because the Company’s filings were a product of the Initial RFP, the Department determined that the Company must first participate in the Revised RFP, which was pending for approval at that time in D.P.U. 10-76 in order to satisfy our directives and emergency regulations in D.P.U. 10-58. D.P.U. 10-71/10-72/10-73.

C. Motions to Dismiss

On August 25, 2010, Alliance filed its initial Motion to Dismiss (“Motion to Dismiss”). Alliance sought to dismiss the Petition based upon the Department’s Order in D.P.U. 10-71/10-72/10-73 (Motion to Dismiss at 1). Alliance contended that the solicitation process for the proposed Cape Wind contracts was flawed because it did not consider out-of-state resources (Motion to Dismiss at 1-2, 10). Alliance argued that the emergency long-term contract regulations require all long-term contract proposals to be the product of a solicitation that considers both in-state and out-of-state resources (Motion to

Dismiss at 1-2, 11-12, 14, 16). Alliance maintained that the Department made this requirement plain when it dismissed the NSTAR Electric contracts in D.P.U. 10-71/10-72/10-73 (Motion to Dismiss at 12).

On September 17, 2010, the Department denied the Motion to Dismiss without prejudice (Tr. 5, at 1805). The Department explained that it had stated on four separate occasions that National Grid must demonstrate in this case compliance with the emergency long-term contract regulations (Tr. 5, at 1803-1804). The Department determined that the appropriate time to assess National Grid's compliance with D.P.U. 10-58 was at the close of the record in this case (Tr. 5, at 1804-1805). In affording National Grid the opportunity and burden to demonstrate such compliance, the Department recognized that the Cape Wind contracts were not the product of a competitive request for proposals that on its face excluded out-of-state resources, but were instead the result of individual negotiations (Tr. 5, at 1804).

On October 7, 2010, Alliance filed its Second Motion to Dismiss the Petition. Alliance asserts that the record in this case conclusively demonstrates that National Grid unlawfully denied out-of-state resources an opportunity to compete to serve the load that will be served by the Cape Wind contracts (Second Motion to Dismiss at 1, 11; Alliance Reply Brief at 8). Alliance also requests that National Grid be directed to fully consider all renewable energy alternatives, both in-state and out-of-state (Second Motion to Dismiss at 2).

In support of its Second Motion to Dismiss, Alliance relies upon and incorporates by reference all arguments raised in the Motion to Dismiss (Second Motion to Dismiss at 3). In addition, Alliance challenges National Grid's response to a record request (i.e.,

RR-DPU-NG-2) asking the Company to identify all places in the record demonstrating its actions to comply with the Department's directives in D.P.U. 10-58 (Second Motion to Dismiss at 3). First, Alliance argues that National Grid's claim that offshore wind is needed to meet the region's renewable energy requirements is irrelevant to whether National Grid complied with D.P.U. 10-58 (Second Motion to Dismiss at 3). Alliance next disputes the three reasons National Grid claims it commenced individual negotiations with Cape Wind as similarly irrelevant to National Grid's compliance (Second Motion to Dismiss at 4).²³⁰ Alliance also contends that National Grid did not consider whether out-of-state resources could meet its requirements as readily and at a lower cost than Cape Wind since the Company did not know any pricing terms offered by those resources (Alliance Reply Brief at 9-10, citing Tr. 12, at 2445-7, 2455-2457; Tr. 5, at 1016); Second Motion to Dismiss at 8).

Alliance maintains that the Cape Wind contracts are materially indistinguishable from the dismissed NSTAR Electric contracts (Second Motion to Dismiss at 9). Alliance argues that the emergency long-term contract regulations require National Grid to consider out-of-state resources before entering into a long-term contract (Second Motion to Dismiss at 9). Alliance

²³⁰ Alliance explains that National Grid alleges that it individually negotiated with Cape Wind because of: (1) the uncertain timing of a statewide solicitation; (2) Cape Wind's advanced permitting status; and (3) the time sensitivity of federal tax and financing incentives (Second Motion to Dismiss at 4). Alliance states that, as National Grid acknowledges, the statewide solicitation timing is no longer uncertain and thus cannot justify excluding out-of-state resources (Second Motion to Dismiss at 4-5). Alliance maintains that the Cape Wind project's alleged shovel readiness may be impacted by many factors, and is not as far along as National Grid argues (Second Motion to Dismiss at 5-6). Alliance also contends that the Department already rejected the timing of federal incentives as a basis to justify a long-term contract (Second Motion to Dismiss at 6-8).

contends that the Department dismissed the NSTAR Electric contracts for failing to comply with this requirement (Second Motion to Dismiss at 9). Alliance asserts that National Grid must be held to the same standard as NSTAR Electric and, thus, like the NSTAR Electric contracts, the Cape Wind contracts must be dismissed (Second Motion to Dismiss at 9, 11).

Alliance argues that there is no way National Grid may demonstrate compliance with the directives in D.P.U. 10-58 after the fact (Second Motion to Dismiss at 10). Alliance explains that National Grid conducted its solicitation and executed the Cape Wind contracts before the Department adopted the emergency long-term contract regulations (Second Motion to Dismiss at 12). Alliance maintains that the only way to cure the Company's failure to consider out-of-state resources is by conducting a new solicitation process (Second Motion to Dismiss at 10). By approving the Cape Wind contracts without allowing out-of-state resources to compete to serve the 3.5 percent of National Grid's load at issue, Alliance concludes that the Department would be discriminating against out-of-state resources in violation of its own emergency regulations, the suspension clause of Section 83, and the Commerce Clause of the United States Constitution (Alliance Reply Brief at 10).

D. Positions of the Parties

1. Cape Wind and National Grid

On October 19, 2010, Cape Wind and National Grid filed a joint response opposing the Second Motion to Dismiss ("Joint Response to Second Motion to Dismiss") in which they incorporated arguments from their response opposing the Motion to Dismiss ("Joint Response to Motion to Dismiss") (Joint Response to Second Motion to Dismiss at 2 n.1). Cape Wind

and National Grid argue that the Company has fully complied with the Department's directives in D.P.U. 10-58 and its governing regulations at 220 C.M.R. § 17.00 et seq. (Joint Response to Second Motion to Dismiss at 1-2). They assert that Alliance fails to satisfy the legal standard of review for a motion to dismiss (Joint Response to Second Motion to Dismiss at 6-7; Joint Response to Motion to Dismiss at 1-2). Furthermore, Cape Wind and National Grid contend that the record is replete with evidence of National Grid's compliance with D.P.U. 10-58 (Joint Response to Second Motion to Dismiss at 4-5, citing RR-DPU NG-2; Exhs. NG-RAR at 4; NG-MNM-R at 1-3, 7-12; NG-SFT at 5-14, 87-88, 93-94, 96-102, 106-24; CW-DJD-1, at 15-21, 27-30; NG-MNM at 7-9, 13, 28, 30-33; AG-NG-2-3; APNS-NG-1-6; Tr. 5, at 999-1,029; Joint Response to Motion to Dismiss at 6-10; Cape Wind Reply Brief at 21-22).

Contrary to Alliance's assertions, Cape Wind and National Grid state that D.P.U. 10-58 did not require National Grid to compare Cape Wind to out-of-state proposals nor to allow out-of-state resources to "compete" for the load proposed to be served by the Cape Wind contracts (Joint Response to Second Motion to Dismiss at 8; Cape Wind Reply Brief at 21; National Grid Reply Brief at 15-16). They contend that the Department could have ordered National Grid to start its negotiation process with Cape Wind over again in light of the removal of the geographic limitation, but did not (Joint Response to Second Motion to Dismiss at 19, citing D.P.U. 10-58, at 6). They conclude that, given the express authorization in Section 83 of individual, bilateral negotiations (and the Department's prior ruling in D.P.U. 09-138), the

Department correctly did not impose a requirement that National Grid commence negotiations anew (Joint Response to Second Motion to Dismiss at 8).

Cape Wind and National Grid assert that the proposed contracts are factually and legally distinguishable from those dismissed by the Department in D.P.U. 10-71/10-72/10-73 (Joint Response to Second Motion to Dismiss at 17; Joint Response to Motion to Dismiss at 11-12). They argue that the NSTAR Electric contracts arose out of the Initial RFP, which contained the express geographical limitation that D.P.U. 10-58 directed the electric distribution companies to remove (Joint Response to Second Motion to Dismiss at 18; National Grid Reply Brief at 16). In addition, they state that the NSTAR Electric contracts were filed with the Department *after* the emergency regulations took effect (Joint Response to Second Motion to Dismiss at 18 (emphasis in original); Joint Response to Motion to Dismiss at 12). In contrast, they observe that the Cape Wind contracts arose out of an individual negotiation completely distinct from the Initial RFP process approved by the Department in D.P.U. 09-77 (Joint Response to Second Motion to Dismiss at 19; Joint Response to Motion to Dismiss at 12).

Cape Wind and National Grid assert that the geographical limitation of Section 83 on the selection of renewable projects had no effect on the Company's selection of Cape Wind (Joint Response to Second Motion to Dismiss at 8-9, citing Exhs. NG-RAR at 4-7; NG-SFT at 74-75, 127, 130; RR-DPU-NG-2). In deciding to execute these contracts, National Grid contends that it considered the regional need for a large-scale renewable project as well as the potential resources available in New England, New York, and other locations (National Grid

Brief at 39, citing Exhs. AG-NG-2-3; APNS-NG-1-6; DPU-NG-2; NG-MNM-R at 1-3, 12; Tr. 5, at 1002-1029; National Grid Reply Brief at 16). National Grid maintains that Cape Wind provided the most viable and attractive resource in the region (National Grid Brief at 40-41).

Cape Wind and National Grid contend that National Grid has demonstrated that there is a regional need for Cape Wind and other renewable resources, and National Grid did not consider Cape Wind through a Massachusetts-only lens (Joint Response to Second Motion to Dismiss at 9; Cape Wind Reply Brief at 22, citing Exhs. NG-RAR at 4-7; NG-SFT at 74-75, 127, 130). They argue that the Company made its decision to pursue contracts with Cape Wind by assessing both the demand for and supply of renewable energy in New England, New York, and other locations (Joint Response to Second Motion to Dismiss at 9; Cape Wind Reply Brief at 22). Cape Wind and National Grid assert that National Grid's analysis, together with a similar analysis provided by Cape Wind, demonstrate that National Grid's assessment of the Cape Wind project was not made with a Massachusetts-only perspective of eligible resources (Joint Response to Second Motion to Dismiss at 9-10, citing Exhs. CW-RBS-1, at 21; CW-RBS-7; CW-RBS-9, at 28; Cape Wind Reply Brief at 22).

Cape Wind and National Grid state that National Grid relied on its own extensive experience and understanding of the regional market for renewable energy, in addition to above-referenced assessments, in its decision to enter into individual negotiations and execute long-term contracts with Cape Wind (Joint Response to Second Motion to Dismiss at 10, citing RR-DPU-NG-2). Specifically, they contend that the collective expertise and understanding of

the Company's witnesses, Mr. Rapp and Mr. Milhous, provided context in terms of the regional marketplace and the applicable regulatory requirements for new renewable resources, demonstrating that National Grid's solicitation of the Cape Wind contracts complied with D.P.U. 10-58 (Joint Response to Second Motion to Dismiss at 11).

Cape Wind and National Grid explain that, in his position as director of wholesale market relations for the energy portfolio management organization at National Grid, Mr. Milhous is responsible for monitoring and engaging in developments in market structure and operations in the ISO-NE and NYISO markets, and in other regulatory and policy developments that directly affect electric power procurement, including renewable energy (Joint Response to Second Motion to Dismiss at 10, citing Exh. NG-MNM at 1-2, 6-8). They also state that Mr. Milhous is responsible for electric supply procurement for National Grid's five electric distribution companies in Massachusetts, New Hampshire, New York, and Rhode Island, which includes the purchase of RECs for the Massachusetts, Rhode Island, and New Hampshire companies (Joint Response to Second Motion to Dismiss at 10, citing Exh. NG-MNM at 3). Cape Wind and National Grid state that Mr. Milhous was one of the principal negotiators of National Grid's affiliate Narragansett Electric's power purchase agreement with Deepwater Wind in Rhode Island (Joint Response to Second Motion to Dismiss at 10-11, citing Exh. NG-MNM at 3-4). They also assert that he is familiar with the inventory of renewable energy sources in New York and the integration of renewable energy facilities into the NYISO system (Joint Response to Second Motion to Dismiss at 11, citing Tr. 12, at 2405, 2417-2418, 2562 and 2599).

Cape Wind and National Grid also explain that Mr. Rapp, as senior vice-president for National Grid's energy portfolio management (and to whom Mr. Milhous reports), has direct responsibility for all procurement and trading activities in the United States, both physical and financial, for electric, natural gas, fuel oil and emissions credits on behalf of National Grid USA's four electric distribution companies and eight gas distribution companies, including Niagara Mohawk Power Corporation (Joint Response to Second Motion to Dismiss at 11, citing Exh. NG-RAR at 1). They maintain that Mr. Rapp has decades of experience in the regulatory and energy market fields in New England and New York (Joint Response to Second Motion to Dismiss at 11, citing Exh. NG-RAR at 2).

Cape Wind and National Grid conclude that the Company's negotiations with Cape Wind were not motivated by a preference for a Massachusetts project and, therefore, were fully compliant with both Section 83 and D.P.U. 10-58 (Joint Response to Second Motion to Dismiss at 11; Cape Wind Reply Brief at 22). For purposes of the Second Motion to Dismiss, Cape Wind and National Grid argue that the facts alleged by witnesses must be accepted as true and thus Alliance's motion must be denied (Joint Response to Second Motion to Dismiss at 11-12, citing Riverside Steam & Electric Company, D.P.U. 88-123, at 26-27 (1988)).

Cape Wind and National Grid rely on the terms of the Cape Wind contracts as additional evidence that National Grid selected Cape Wind after an evaluation of the inventory of renewable resources region-wide, and not because of Section 83's geographic limitation (Joint Response to Second Motion to Dismiss at 12-13; National Grid Brief at 42). They state that the Cape Wind contracts include a condition precedent that the contracts would take effect

only if the Department suspended the geographical limitations clause (Joint Response to Second Motion to Dismiss at 12; National Grid Brief at 42-43). They specifically rely upon the Regulatory Approvals provision, at pages 10-11 of the original PPA-1, and subsection (c) of Section 7 of PPA-1, entitled “Binding Agreement” (Joint Response to Second Motion to Dismiss at 12; National Grid Brief at 42). As additional support, they observe that National Grid explicitly requested that the Department suspend the application of any geographical limitation set forth in Section 83 to its request for approval of the Cape Wind contracts (Joint Response to Second Motion to Dismiss at 12, citing Letter of National Grid to Department of Public Utilities (May 10, 2010), at 2-3; Motion of National Grid to Suspend the Application of the Jurisdictional Boundaries Clause of Section 83 of the Green Communities Act and Associated Regulations (June 4, 2010); National Grid Brief at 42). For these reasons, Cape Wind and National Grid conclude that the Second Motion to Dismiss is without merit and should be denied (Joint Response to Second Motion to Dismiss at 13).

Cape Wind and National Grid dispute Alliance’s criticisms of National Grid’s decision-making process (Joint Response to Second Motion to Dismiss at 13). They claim that National Grid commenced individual negotiations with Cape Wind because: (1) the timing of the statewide solicitation was uncertain; (2) Cape Wind was far along in its permitting process; and (3) federal tax and financing incentives were time-sensitive. Cape Wind and National Grid assert that all three of these claims are demonstrably true and support National Grid’s actions (Joint Response to Second Motion to Dismiss at 13, citing Exh. NG-RAR at 4-7; RR-DPU-NG-2). Cape Wind and National Grid contend that the timing of the Revised RFP is

still uncertain because the current schedule allows the electric distribution companies until March 7, 2011, to submit a contract to the Department for review under Section 83 (Joint Response to Second Motion to Dismiss at 14, citing Exh. APNS-1, at 16). As to Cape Wind's advanced permitting status as well as the timing of the federal tax opportunities, Cape Wind and National Grid claim that these factors are independent of the in-state requirement and were additional reasons for National Grid to pursue negotiations with Cape Wind (Joint Response to Second Motion to Dismiss at 16-17). Because the Cape Wind project is in the final stages of permitting, National Grid and Cape Wind contend that no other offshore wind project is anywhere near as close to project financing and commencing construction as Cape Wind, and the next offshore facility could be ten years or more from completion (Joint Response to Second Motion to Dismiss at 15 n.10, citing Exhs. CW-DJD-1, at 5, 22; NG-MNM at 1, 11-12). Also, the federal tax incentives are time-sensitive and that this factor was a reasonable basis for National Grid's decision to negotiate with Cape Wind (Joint Response to Second Motion to Dismiss at 17, citing Exhs. CW-DJD-1, at 10-11, 33; DPU-CW-2-1; DPU-CW-2-8).

Finally, both Cape Wind and National Grid dispute TransCanada's assertion that the Cape Wind contracts violate the Commerce Clause of the Constitution (Cape Wind Reply Brief at 22; National Grid Brief at 40). They argue that the Commerce Clause does not apply to a contract voluntarily negotiated between private parties (Cape Wind Reply Brief at 22; National Grid Brief at 40). Cape Wind contends that the Department's review does not appropriately encompass resolution of a constitutional challenge but, rather, is limited to compliance with its

regulations (Cape Wind Reply Brief at 22-23). National Grid further contends that it made an informed decision to enter into the Cape Wind contracts, and was not forced by law to discriminate against out-of-state alternatives in favor of Cape Wind (National Grid Brief at 42-43; National Grid Reply Brief at 16).

2. Attorney General

The Attorney General argues that competitive solicitations produce the best results for customers (Attorney General Reply Brief at 13). She cautions the Department against authorizing future individual negotiations under Section 83, stating that there are flaws inherent in that solicitation method (Attorney General Brief at 31).

Nevertheless, she acknowledges that Section 83 does not limit the procurement of renewable long-term contracts to competitive solicitations (Attorney General Reply Brief at 13-14). She states that the Legislature expressly authorized individual negotiations like those employed by National Grid, and that the Department expressly approved the solicitation process as reasonable under Section 83 (Attorney General Reply Brief at 13-14). She maintains that the statewide solicitation process and National Grid's individual negotiations were separately approved and were to be conducted separately (Attorney General Reply Brief at 14-15). She also asserts that nothing in Section 83 or D.P.U. 10-58 requires National Grid to solicit multiple bids (Attorney General Reply Brief at 15). She contends that arguments to the contrary fail and should be dismissed (Attorney General Reply Brief at 13-14).

3. CLF et al.

On October 19, 2010, CLF et al. filed a response opposing the Second Motion to Dismiss (“CLF et al. Response to Second Motion to Dismiss”) in which they incorporated arguments from their response opposing the Motion to Dismiss (“CLF et al. Response to Motion to Dismiss”) (CLF et al. Response to Second Motion to Dismiss at 2-3).²³¹ They observe that the Department approved direct negotiations as the method by which National Grid would solicit a long-term contract with Cape Wind in D.P.U. 09-138 and that Alliance should not be permitted to challenge that final decision in this case (CLF et al. Response to Motion to Dismiss at 5; CLF et al. Brief at 9; CLF et al. Reply Brief at 4-6, 21). They contend that D.P.U. 10-58 did not amend or rescind the Department’s approval of National Grid’s solicitation method (CLF et al. Response to Motion to Dismiss at 5-7). In contrast, they allege that D.P.U. 10-58 modified the Department’s approval of the RFP solicitation process in D.P.U. 09-77 by requiring the RFP to be revised to allow out-of-state bidders to participate (CLF et al. Response to Motion to Dismiss at 6-7). Consequently, they argue that the Cape Wind contracts are distinguishable from the NSTAR Electric contracts because the latter failed to comply with the Department’s modified solicitation method (CLF et al. Response to Motion to Dismiss at 7). Furthermore, they assert that Alliance’s claim that Section 83 authorizes only competitively-procured solicitations is contrary to the language of the statute, which they argue embraces alternative methods of solicitation, including individual

²³¹ They also incorporate by reference the arguments of DOER, National Grid, and Cape Wind in opposing the Motion to Dismiss (CLF et al. Response to Second Motion to Dismiss at 3 n.5).

negotiations (CLF et al. Response to Motion to Dismiss at 8; CLF et al. Reply Brief at 4, 21). CLF et al. conclude that National Grid has demonstrated its compliance with D.P.U. 10-58 by providing evidence that it did not discriminate against out-of-state projects when it decided to negotiate with Cape Wind (CLF et al. Reply Brief at 22).

As for TransCanada's claims, CLF et al. argue that the only way to satisfy TransCanada in the context of the direct negotiations that are allowed under Section 83 would be for the renewable energy project under consideration to be located outside of Massachusetts, a result they characterize as absurd (CLF et al. Reply Brief at 22). Moreover, they dismiss TransCanada's argument that this case represents improper favoring of "an in-state generator" on the basis that Cape Wind is located outside the jurisdiction of Massachusetts, in federal waters (CLF et al. Reply Brief at 22).

4. Department of Energy Resources

On October 19, 2010, DOER filed a response opposing the Second Motion to Dismiss ("DOER Response to Second Motion to Dismiss") in which it incorporated the arguments it made in opposing the Motion to Dismiss ("DOER Response to Motion to Dismiss") (DOER Response to Second Motion to Dismiss at 1-2). DOER contends that the Second Motion to Dismiss fails to meet the applicable legal standard, which requires the Department to find that it is "beyond a doubt that the petitioner could prove no set of facts in support of its position" (DOER Response to Second Motion to Dismiss at 2, citing NSTAR Electric Company, D.T.E. 03-121, at 9).

DOER argues that by requiring the electric distribution companies to issue the Revised RFP, D.P.U. 10-58 effectively found that the Initial RFP was no longer a reasonable method of solicitation (DOER Response to Motion to Dismiss at 7). In so doing, DOER explains, the Department recognized the differences between the Initial RFP, which excluded out-of-state participants, and the individual negotiations between National Grid and Cape Wind (DOER Response to Motion to Dismiss at 7). DOER states that an RFP process is predicated on comparing proposals to pre-determined characteristics, each with a certain relative weight, whereas an individual negotiation is predicated on a determination by the electric distribution company that the beneficial characteristics of a proposed facility are in the interest of its ratepayers and require immediate, direct negotiations (DOER Response to Motion to Dismiss at 7). DOER emphasizes that the emergency long-term contract regulations did not alter, nor could it, the right Section 83 affords electric distribution companies to engage in individual negotiations (DOER Response to Motion to Dismiss at 8).

DOER contends that Alliance's assertion that the Cape Wind solicitation must start over is flawed, as explained in the responses of DOER, National Grid/Cape Wind, and CLF et al. to the Motion to Dismiss (DOER Brief at 6-7 n.9). In addition, DOER asserts that D.P.U. 10-58 placed no obligation on National Grid to restart its solicitation process (DOER Brief at 7). DOER argues that the Department instead intended to have National Grid confirm that its solicitation of, and execution of contracts with, Cape Wind were not the product of discrimination against out-of-state interests (DOER Brief at 8). DOER concludes that National Grid has demonstrated that it conducted individual negotiations and executed contracts with

Cape Wind because of the project's substantial and unique benefits, not its location (DOER Brief at 8; DOER Response to Motion to Dismiss at 10-13). DOER argues that National Grid has shown that it would have chosen Cape Wind whether or not out-of-state options were eligible alternatives (DOER Brief at 8, citing Exhs. NG-MNM-R at 1-3, 7-12; NG-SFT at 5-14, 87-88, 93-94, 96-102, 106-24; CW-DJD-1, at 15-21, 27-30; NG-MNM at 7-9, 13, 28, 30-33; RR-DPU-NG-2; Tr. 5, at 999-1012; DOER Response to Motion to Dismiss at 10-13). DOER asserts that National Grid urged the Department to suspend Section 83's geographic limitation even before D.P.U 10-58 was issued (DOER Brief at 8 n.11).

DOER also argues that by eliminating Section 83's in-state requirement, D.P.U. 10-58 makes evidence concerning out-of-state alternatives relevant to the proceeding for whatever evidentiary value they may have (DOER Brief at 7). DOER asserts that the record in this case contains extensive evidence of out-of-state projects, and that the parties have had the opportunity to consider the Cape Wind contracts in light of this evidence (DOER Brief at 8). (DOER Brief at 6-7 n.9). Nevertheless, DOER denies that Section 83 or the emergency long-term contract regulations require that long-term contracts be the product of a competitive solicitation process that considers in-state and out-of-state resources (DOER Response to Motion to Dismiss at 7-8).

5. Associated Industries of Massachusetts

On October 19, 2010, AIM filed a response in support of the Second Motion to Dismiss ("AIM Response to Second Motion to Dismiss"), relying on its response in support of the Motion to Dismiss ("AIM Response to Motion to Dismiss") (AIM Response to Second Motion

to Dismiss at 1). AIM states that, at the time of the Department's approval of National Grid's method of soliciting a long-term contract with Cape Wind, Section 83 did not allow out-of-state participants to be considered and thus "chilled potential suppliers from the process" (AIM Response to Motion to Dismiss at 3-4). As a consequence, AIM asserts, National Grid was unable to consider other projects that might have been more beneficial to the Company, its customers, and the environment (AIM Response to Motion to Dismiss at 4).

AIM contends that National Grid has failed to demonstrate that it solicited out-of-state bids as required by the emergency long-term contract regulations (AIM Response to Motion to Dismiss at 4; AIM Brief at 20). AIM argues that the Department dismissed the NSTAR Electric contracts because the Revised RFP, a revised statewide solicitation process, must include out-of-state bids (AIM Brief at 20). AIM asserts that the Department determined that National Grid's bilateral contract process must be identical to the statewide solicitation process, thus requiring National Grid to prove it considered out-of-state bids (AIM Brief at 20). AIM states that National Grid has presented no credible evidence that it procedurally or substantively complied, and thus the Petition should not be approved (AIM Brief at 20). AIM argues that approval of the Cape Wind contracts under these circumstances was not intended by the Green Communities Act (AIM Response to Motion to Dismiss at 4). AIM alleges that the only cure is to dismiss the Petition and direct a "transparent and even handed" rebidding of proposals for long-term contracts for the Company (AIM Response to Motion to Dismiss at 4).

6. New England Power Generators Association

NEPGA states that Section 83 and Department precedent require that generation resources be competitively solicited in the best interest of customers, thereby protecting customers from unnecessary costs (NEPGA Brief at 2). NEPGA asserts that National Grid's individual negotiation process violated the competitive solicitation requirements of Section 83 and failed to comply with long-standing Department precedent requiring an open and transparent process in the solicitation of long-term contracts (NEPGA Brief at 2, 6, 12; NEPGA Reply Brief at 3). NEPGA argues that the Department should deny the Petition as presented and require National Grid and Cape Wind to undertake a fully competitive process as required by Section 83 and Department precedent (NEPGA Brief at 3). NEPGA contends that Section 83 and applicable precedent were not meant to provide legal justification for the solicitation and selection of one project with unique attributes in a single solicitation (NEPGA Brief at 3). NEPGA states that Section 83 requires electric distribution companies to solicit proposals (more than one) for the purpose of entering into cost-effective long-term contracts and does not allow for the individual solicitation of one proposal (NEPGA Brief at 9-14). NEPGA argues that National Grid's individual solicitation was inconsistent with the requirements of the statewide process (NEPGA Brief at 16-21). NEPGA asks the Department to dismiss the Cape Wind contracts as it did the NSTAR Electric contracts, on the grounds that the emergency long-term contract regulations and Section 83 require that electric distribution companies consider out-of-state resources as part of any solicitation (NEPGA Brief at 22).

7. TransCanada

TransCanada contends that the Department must not approve the Cape Wind contracts because National Grid failed to comply with D.P.U. 10-58 (TransCanada Brief at 1, 4).

TransCanada asserts that the record reveals that National Grid took no action to comply with that Order (TransCanada Brief at 4). Further, TransCanada claims that National Grid's procurement of the Cape Wind contracts did not invite bids from out-of-state generators in violation of the Commerce Clause of the United States Constitution (TransCanada Brief at 4).

E. Analysis and Findings

An electric company must be in "compliance with the provisions of law and the orders, directions and requirements of the [D]epartment." G.L. c. 164, § 76; see Fitchburg Gas and Elec. Light Co. v. Dep't of Telecomm. & Energy, 440 Mass. 625, 635 (2004). The Department has authority to dismiss, as patently defective, filings that contravene a Department directive in a previous proceeding. Mass. Elec. Co. v. Dep't of Pub. Utils., 383 Mass. 675, 678-681 (1981); Western Mass. Elec. Co., D.P.U. 1300, at 12-13 (1983). In D.P.U. 1300, we held that "directives in Department Orders to address specific issues should be regarded as creating specific filing requirements which must be included in subsequent rate filings." D.P.U. 1300, at 12.

In adopting the emergency long-term contract regulations in D.P.U. 10-58, we expressly stated that, with respect to the Cape Wind contracts, National Grid must demonstrate compliance with the emergency long-term contract regulations. D.P.U. 10-58, at 6. The emergency long-term contract regulations made two changes to the 2009 long-term contract

regulations. The first change eliminated the provision that long-term contracts be available only to in-state resources. The second change removed the in-state limitation from the requirement that the resource create additional employment.²³² We examine below whether National Grid has demonstrated compliance with the Department's directives in D.P.U. 10-58 and the emergency long-term contract regulations.

As previously described, the Cape Wind contracts were the result of individual negotiations and not the product of a competitive solicitation. In approving individual negotiations between National Grid and Cape Wind, the Department recognized that Section 83 explicitly authorizes individual negotiations as a reasonable method of soliciting proposals from renewable energy developers. D.P.U. 09-138, at 11. The Department determined that Section 83 authorizes different solicitation methods, notably both competitive solicitations and individual negotiations, which we found appropriately allowed flexibility in carrying out the purpose of the statute. D.P.U. 09-138, at 11. We have already determined that National Grid's use of an individual negotiation was appropriate, and have addressed the issue in Section VI.B, above. Nevertheless, we recognize that, for purposes of determining compliance with D.P.U. 10-58, it is necessary to consider National Grid's solicitation method.

With respect to the Initial RFP, which on its face excluded out-of-state resources, the Department directed the electric distribution companies to comply with D.P.U. 10-58 and the emergency long-term contract regulations by reopening the RFP to allow participation by all eligible in- and out-of-state resources. An RFP by its nature allows participation by more than

²³² The Department discussed employment benefits of PPA-1 in Section VII.D.8, above.

one eligible resource. Unlike an RFP, the approved individual negotiations at issue in this case involved participation by only one resource: Cape Wind. Because Section 83 allows for solicitation methods that are significantly different from one another, it logically follows that there will also be differences in the showing a petitioner must make to demonstrate regulatory compliance. While all petitioners must demonstrate such compliance, the solicitation method chosen will influence the type of showing that will be applicable. In this case, a number of the parties, including Alliance, would have the individual negotiations between National Grid and Cape Wind opened for participation by other resources. For the reasons above, we find that it would not be appropriate to impose upon the solicitation method at issue in this case the same means of complying with D.P.U. 10-58 and the emergency long-term contract regulations that we required of the Initial RFP. We did not mandate such a means of compliance in D.P.U. 10-58 and we decline to do so now.

Thus, we must examine whether National Grid has demonstrated that, in employing individual negotiations and executing long-term contracts with Cape Wind, the Company complied with D.P.U. 10-58 and the emergency long-term contract regulations. For the reasons discussed below, we find that National Grid has complied with our directives.

There is ample evidence in the record establishing that National Grid chose to execute long-term contracts with Cape Wind because of its unique attributes and compliance with those provisions of Section 83 that are unrelated to the statute's now suspended geographic restriction. National Grid has shown that, among the possible renewable projects pending in New England, it determined that the Cape Wind project was the most viable and attractive in

terms of: (1) size, scope, and permitting status; and (2) being able to help the region achieve its growing renewable energy needs and requirements through the development of a large-scale offshore wind generating project (see Section VII.D, above; Exhs. NG-MNM at 7; NG-MNM-R at 1-3, 12; NG-SFT at 5-14, 74-75, 127-130; NG-RAR at 4-7; CW-DJD-1, at 20-21, 32; AG-NG-2-3; APNS-NG-1-6; Tr. 5, at 996, 999-1004, 1010-1011, 1022, 1026; RR-DPU-NG-2, at 1-2). In making this determination, we find that National Grid relied upon the collective expertise of its witnesses, Mr. Rapp and Mr. Milhous, who have experience in, and an understanding of, the available new renewable resources in the regional marketplace (Exhs. NG-MNM at 1-4, 6-8; NG-RAR at 1-2). In addition, we find that National Grid considered the ability of Cape Wind, because of its location in southern New England, to provide transmission reliability benefits without requiring upgrades to address transmission constraints (Exhs. NG-SFT at 12-13; CW-DJD-1, at 15, 19-21; Tr. 5, at 1000-1001; 1007-1008; 1013; RR-DPU-NG-2, at 2-3). We also determine that National Grid considered the high-capacity factors of offshore wind and the ability of offshore wind to moderate system peak load (Exh. CW-DJD-1, at 16-21; Tr. 5, at 1013-1014). For all these reasons, we find that National Grid has demonstrated that it did not rely on the geographic restriction of Section 83 in choosing to execute the Cape Wind contracts.

Further, National Grid's testimony that it took no specific actions in response to D.P.U. 10-58 to consider out-of-state resources (Tr. 5, at 1021) does not warrant dismissal of its filing in light of other information before us. National Grid had already taken steps to address the geographic limitations of Section 83 that had been challenged in court by

TransCanada before the Department issued D.P.U. 10-58. On May 10, 2010, a month before the Department issued D.P.U. 10-58, National Grid acknowledged the pending lawsuit filed by TransCanada challenging the constitutionality of the geographic restriction in Section 83 when it filed the Cape Wind contracts with the Department for approval (Cover Letter at 2).

National Grid also acknowledged that Section 83 contained provisions authorizing the Department to suspend any terms that were subject to judicial challenge to the statute (Cover Letter at 2-3). National Grid stated that it would be filing a motion asking the Department to suspend Section 83's geographic restrictions (Cover Letter at 3).

On June 4, 2010, five days before the Department issued D.P.U. 10-58, National Grid filed a motion to suspend the application of the geographic restriction in Section 83 and the implementing regulations ("Motion to Suspend"). National Grid urged the Department to grant the motion immediately in order to conduct a review of the Cape Wind contracts as if the geographic restriction were not part of Section 83 or the 2009 long-term contract regulations (Motion to Suspend at 2). In support of the Motion to Suspend, National Grid explained that suspending this provision would not prevent the Department from implementing the remainder of Section 83 and that the Cape Wind contracts should be reviewed and approved in accordance with those remaining criteria (Motion to Suspend at 2-3). In addition, the Cape Wind contracts each contain a condition precedent that the contracts would take legal effect only if the Department suspended the geographic restriction (PPA-1, at § 1; PPA-2, at § 1). Specifically, the Regulatory Approvals provision of the PPAs contains the following condition:

[I]n the event that, at the time of approval, the provisions of such Section 83 and of such regulations limiting the scope thereof to renewable generation located within the boundaries of the Commonwealth of Massachusetts, including state waters, or in adjacent federal waters, are subject to judicial challenge or have been found by a court to be invalid, the [Department] shall suspend the applicability of such provisions, as provided in such Section 83, as applicable to such approval.

(PPA-1, at § 1; PPA-2, at § 1 (definitions, “Regulatory Approval”). Moreover, National Grid states that it assumed that the Department would suspend the requirement in Section 83 limiting the availability of long-term contracts to in-state resources and examined the proposed contracts for conformity with the requirements of Section 83 that do not relate to the geographic restriction (Tr. 5, at 999; RR-DPU-NG-2, at 2).

For all of these reasons, we find that National Grid has demonstrated that it did not rely on the geographic restriction of Section 83 in choosing to execute the Cape Wind contracts. Rather, it selected Cape Wind based on the facility’s unique characteristics and its ability to assist National Grid in achieving the goals of Section 83. Furthermore, knowing that the TransCanada lawsuit created uncertainty about the validity of that restriction, the Company assessed the benefits of Cape Wind in the context of renewable resources available in the region and determined that Cape Wind best satisfied the other provisions of Section 83 and National Grid’s needs (Tr. 5, at 1026-1027). To clarify the circumstances under which it executed these contracts, the Company preemptively asked the Department to suspend Section 83’s geographic restriction and provided evidence of its assessment of the project in the regional context. The Company has made plain that it would have selected Cape Wind even if Section 83 had from its inception been open to any resource regardless of location

(Exh. NG-MNM-R at 12; Tr. 5, at 1002-1004, 1020, 1025-1026). We, therefore, conclude that National Grid has demonstrated compliance with D.P.U. 10-58 and, accordingly, disallow the Second Motion to Dismiss.

F. Conclusion

The Department has already found that National Grid's proposal to enter into PPA-1 will advance the fundamental purpose of Section 83's long-term contracting obligation, to facilitate the financing of renewable energy projects. We have also found that PPA-1 is a cost-effective mechanism for procuring renewable energy on a long-term basis. Further, we have found that PPA-1 is in the public interest. In this section, we have found that National Grid has demonstrated compliance with D.P.U. 10-58 and we disallow the Second Motion to Dismiss. For all of these reasons, we find that PPA-1 complies with all requirements and we therefore approve it, pursuant to Section 83 and Section 94A. In the following sections, we will review the Company's proposals for remuneration and cost recovery, as well as its proposal to enter into PPA-2, pursuant to Section 83 as well as our general regulatory and ratemaking obligations.

X. REMUNERATION

A. National Grid's Proposal

PPA-1 comprises 3.5 percent of National Grid's total energy demand. National Grid seeks to recover four percent remuneration on the annual payments under the contract, pursuant to Section 83. The Company would recover remuneration only for the amount of energy actually purchased (Tr. 5, at 1091).

B. Positions of the Parties

1. National Grid

As described in Section VIII, above, National Grid disagrees with a number of parties who argue that Section 83 provides a “cap” of three percent on each electric distribution company’s ability to enter into long-term contracts for renewable energy pursuant to Section 83 (Company Reply Brief at 16-17, citing AIM Brief at 14-16, TransCanada Brief at 6-7, RESA Brief at 9-10). National Grid claims that there is no statutory cap, and that remuneration is not limited to three percent of the Company’s total energy demand (National Grid Reply Brief at 17). The Company argues that the plain language of Section 83 requires an electric distribution company, under certain circumstances, to purchase at least three percent of its total energy demand under long-term contracts for renewable energy, but that Section 83 does not prohibit a company from purchasing more than three percent if the Department approves contracts exceeding that amount (National Grid Reply Brief at 17). The Company asserts that Section 83 explicitly states that the remuneration will apply to all annual payments under the contract (National Grid Reply Brief at 19). According to National Grid, if the Department limited the remuneration to three percent of total energy demand, the Company would reduce its obligation under PPA-1 and purchase only 45 percent of the facility’s output (National Grid Reply Brief at 19, citing Exh. DPU-NG-2-11; Tr. 5, at 1090-1091; Tr. 13 at 2711-2713).

2. Cape Wind

Cape Wind claims that the remuneration provision of Section 83 is unambiguous (Cape Wind Reply Brief at 24). Cape Wind argues that the remuneration is explicitly tied to the

annual payments under the PPA rather than to a minimum or maximum contracting obligation (Cape Wind Reply Brief at 24). Cape Wind contends that there is no record evidence to support Alliance's claim that the four percent remuneration encourages the Company to pay the highest price for renewable energy for which it can obtain Department approval, and that the Attorney General recommendation to approve the PPAs provides adequate assurance that they are fair and reasonable (Cape Wind Reply Brief at 24-25).

3. TransCanada

TransCanada asserts that National Grid may not receive the four percent remuneration on all payments under the contract because Section 83 imposes a three percent cap on the amount of renewable resources that a distribution company may purchase (TransCanada Brief at 6-7). To support its claim that there is a cap, TransCanada cites to an article authored by the general counsel of the Massachusetts Executive Office of Energy and Environmental Affairs and the commissioner of the DEP, which states that the Green Communities Act sets up a pilot project requiring electric distribution companies to enter into long-term contracts for renewable energy that are "capped at [three] percent of utility load" (TransCanada Brief at 7, citing Exh. AIM-4, at 300).

4. Associated Industries of Massachusetts

AIM claims that to be consistent with legislative intent, Section 83 must be read to impose a three percent cap on the amount of renewable energy electric distribution companies may acquire through long-term contracts, and that any remuneration they receive must be limited to the three percent cap (AIM Brief at 14-16). According to AIM, current basic

service contracts, which include some renewable energy, do not include any remuneration for electric distribution companies (AIM Brief at 15). AIM contends that because ratepayers do not pay four percent remuneration on basic service purchases, it would be counterintuitive to interpret Section 83 as having no cap (AIM Brief at 15-16). AIM argues that such an interpretation would require the Department to believe that the Legislature sought to abandon historic prohibitions on long-term contracting and require ratepayers to pay four percent remuneration on far more than three percent of total energy demand, which would add millions of dollars to ratepayer's bills (AIM Brief at 16).

5. Alliance to Protect Nantucket Sound

Alliance asserts that the four percent remuneration gives National Grid an incentive to pay the highest price for renewable energy for which it can obtain Department approval (Alliance Brief at 9). Alliance claims that National Grid conceded this when it admitted that if the Department interprets Section 83 as providing for remuneration on only three percent of National Grid's total energy demand, National Grid would revise PPA-1 to ensure that it purchases only an amount of renewable energy equal to three percent of its total energy demand (Alliance Brief at 9, citing Tr. 13, at 2,711-2,713; Exh. DPU-NG-2-11).

C. Analysis and Findings

In Section VIII, above, we found that Section 83 and 220 C.M.R. § 17.08(5) require electric distribution companies to enter into long-term contracts for renewable energy in an amount equal to three percent of their total energy demand, provided that a company receives reasonable proposals, and that this requirement creates a floor and not a cap. Section 83 does

not preclude electric distribution companies from voluntarily entering into long-term contracts for renewable energy in excess of three percent of their total energy demand, subject to Department review and approval. We examined PPA-1 and found that this contract, for an amount of renewable energy equal to 3.5 percent of the Company's total energy demand, is in the public interest (see Section VIII, above).

TransCanada and AIM argue that the remuneration provision of Section 83 is linked to the Company's obligation to enter into long-term contracts for renewable energy in an amount equal to three percent of its total energy demand. They claim that because electric distribution companies need not purchase more than three percent of their total energy demand, their remuneration should not be calculated on anything more. We disagree.

In addressing remuneration, Section 83 provides:

The regulations shall . . . provide for an annual remuneration for the contracting distribution company equal to [four] per cent of the annual payments under the contract to compensate the company for accepting the financial obligation of the long-term contract, such provision to be acted upon by the [Department] at the time of contract approval

Section 83 clearly provides an annual remuneration for an electric distribution company equal to four percent of the annual payments under the contract to compensate it for accepting the financial obligation of the long-term contract for renewable energy. Under the rules of statutory construction, we conclude that we have no discretion to depart from this provision of Section 83. 392 Mass. at 813 (wherever possible, we must give meaning to each word in the legislation; no word in a statute should be considered superfluous); 457 Mass. at 496 (where the language of a statute is clear and unambiguous, it is conclusive as to the intent of the

Legislature). Therefore, the Department finds that National Grid may collect four percent remuneration on the annual payments made under the contract.

XI. COST RECOVERY

A. Introduction

National Grid proposes to recover its forecasted above-market costs and the remuneration associated with PPA-1 from all distribution customers through a new tariff called the Renewable Energy Recovery Provision (“RERP”)²³³ (Exhs. NG-JAL at 8; NG-JAL-2). The Company proposes to reconcile its above-market costs through its existing Basic Service Adjustment Provision (“BSAP”) tariff and the remuneration through the RERP (Exhs. NG-JAL at 9, 13; NG-JAL-2; NG-JAL-3, at 4-8).

As described in detail below, the Company proposes an “own use” treatment of the products purchased under the contract, pursuant to which the Company will allocate the energy purchased under PPA-1 to basic service customers and retain the RECs to meet part of the Company’s RPS obligation for basic service customers (Exh. NG-MNM at 31, 31-32). The Company proposes this cost recovery method to avoid the results of using derivative accounting, which it contends would preclude it from entering into PPA-1 (Exhs. NG-MNM at 33-35; AG-NG-2-27; AIM-NG-2-8; AIM-NG-2-12).

²³³ As we discuss in Section VII, above, PPA-1 is likely to be above market for the term of the contract. However, it is possible that PPA-1 will be below market, in which case National Grid will credit customers the difference. For the sake of simplicity, we will refer only to the recovery of above-market costs in this section.

Specifically, the Company explains that International Financial Reporting Standards (“IFRS”) require the use of derivative accounting for power purchase contracts that are not for “own use” or customer consumption (Exhs. NG-MNM at 34; AIM-NG-1-10, Att. (a) at 13). Derivative accounting requires that a power purchase agreement be recognized on the Company’s balance sheet at fair value (Exhs. AIM-NG-1-10 Att. (a) at 13; NG-MNM at 34).²³⁴ Unlike the FASB accounting standards, IFRS have not codified the use of a regulatory asset²³⁵ (Exh. NG-MNM at 34). Consequently, the Company states that IFRS accounting standards would require it to record the present value of the above-market costs of the contract over the term of the contract (i.e., between approximately \$564 million to \$715 million) as a liability or loss on National Grid plc’s balance sheet (Exhs. NG-MNM at 34; NG-MNM-2 (Supp.)). The Company states that this would result in a material reduction to retained earnings, which would prevent it from entering into PPA-1 (Exh. NG-MNM at 35).

²³⁴ The Company must comply with IFRS as opposed to United States generally accepted accounting principles (“U.S. GAAP”) such as those of the Financial Accounting Standards Board (“FASB”) because National Grid plc, the parent company of the Massachusetts operating companies, is a foreign corporation (see Exh. NG-MNM at 33; Tr. 5, at 1123).

²³⁵ A regulatory asset is an incurred cost for which a regulatory agency such as the Department allows a regulated company to record a deferral to be considered for recovery in the future. NSTAR Electric Company, D.T.E. 03-47-A at 3 n.2 (2003).

B. National Grid's Proposal

1. Above-Market Costs

a. Introduction

The above-market costs of PPA-1 are the difference between the actual contract costs and the market value of the energy, capacity, and RECs that the Company purchases under PPA-1 (Exh. NG-MNM at 38-41; Tr. 9, at 1856). As discussed below, the Company's proposed recovery of above-market costs entails three steps: (1) a calculation of the market value; (2) the recovery by the Company of the market value; and (3) the recovery by the Company of the above-market costs. Each of these steps is described below.

b. Calculation of Market Value

The Company proposes to calculate the value of the energy purchased under PPA-1 on an hourly basis, with the energy value during each hour calculated as the product of: (1) the Company's entitlement to the energy output of the Cape Wind facility during the hour; and (2) the real-time clearing price²³⁶ for energy delivered to the Barnstable switching station for the hour²³⁷ (Exhs. DPU-NG-7-2; NG-JAL-3, at 6; AG-NG-1-7; Tr. 9, at 1847). The market value of the purchased energy will be equal to the sum of the hourly market values (Exh. DPU-NG-7-2; Tr. 9, at 1856).

²³⁶ The real-time clearing price is also referred to as the locational marginal price ("LMP") (Tr. 9, at 1846-1847).

²³⁷ The electricity produced by the Cape Wind facility will interconnect to the electric grid at a switching station in Barnstable, Massachusetts (Exhs. NG-SFT at 88-89; CW-DJD at 3-4).

National Grid proposes to calculate the value of the capacity purchased under PPA-1 as the payments that Cape Wind either actually receives or is eligible to receive²³⁸ in the ISO-NE FCM (Exhs. NG-MNM at 15, 40; NG-JAL at 12-13; NG-JAL-5R at 1; DPU-NG-10-2, at 3; Tr. 9, at 1853-1854). The capacity payments would be based on the facility's seasonal claimed capacity²³⁹ multiplied by the clearing price of the FCM, as determined through FCM capacity auctions (Exhs. NG-MNM at 40; NG-JAL at 12; see also PPA-1, § 4.8 & App. A, exh. E, ¶ 3).

The Company proposes to calculate the value of the RECs purchased under PPA-1 based on the price the Company pays to procure RECs for its basic service customers (Exh. NG-MNM at 40-41). Specifically, National Grid states that it will determine the value of the Cape Wind RECs annually based on the average price that the Company pays to acquire the RECs necessary to meet its RPS requirement associated with the load of its basic service customers that is not satisfied by Cape Wind (Exh. NG-MNM at 40-41; Tr. 9, at 1855-1856).

c. Recovery of Market Value

The Company proposes to assign the energy purchased under PPA-1 to the wholesale suppliers responsible for the supply of basic service to the SEMA load zone (Exh. NG-MNM

²³⁸ Under PPA-1, National Grid will receive the benefit of the facility's potential capacity revenues regardless of whether Cape Wind takes the necessary steps to qualify in the FCM or to receive a capacity supply obligation in the FCM (Exh. NG-DPU-10-2(f)).

²³⁹ Seasonal claimed capacity refers to "the maximum dependable load carrying ability of the Facility in the summer or winter, excluding capacity required for use by the Facility, as determined by ISO-NE pursuant to ISO-NE Rules" (PPA-1, § 1 (definitions)).

at 37). These basic service suppliers would reduce their monthly invoices to the Company to reflect the market value of the assigned Cape Wind energy (Exhs. NG-JAL at 16; NG-MNM at 38).

With respect to capacity, the Company proposes that ISO-NE will make capacity payments directly to Cape Wind.²⁴⁰ Cape Wind would then credit the capacity revenue to the monthly invoices that Cape Wind bills to National Grid for payment under PPA-1, which would, in effect, reduce the bundled price National Grid pays to Cape Wind (Exhs. NG-MNM at 15, 40; NG-JAL at 12-13, 16; NG-JAL-5R; Tr. 9, at 1853-1854; see also PPA-1, App. A, exh. E, ¶ 3).

Under the Company's proposal, the RECs purchased from PPA-1 will be used to satisfy a portion of the Company's basic service RPS requirements, the costs of which are included in the Company's basic service rate (Exhs. NG-MNM at 41; NG-JAL at 4; Tr. 9, at 1835). The market value of the RECs purchased under PPA-1 would, therefore, be recovered through basic service revenues (Exh. NG-JAL-3, at 6; Tr. 9, at 1845). The Company states that this proposed treatment avoids the transaction costs that would result from selling the Cape Wind RECs and then purchasing other RECs to meet basic service requirements (Exh. DPU-NG-7-1).

²⁴⁰ The Company states that ISO-NE rules governing the FCM provide that payment for capacity can be made only to the lead market participant responsible for qualification of the generation resource, which in this case is the generator (i.e., Cape Wind) (Exhs. NG-JAL at 12-13; DPU-NG-7-8; Tr. 9, at 1851-1852; see also PPA-1, § 4.2(c)).

d. Recovery of Above-Market Costs

The Company proposes to recover its forecasted above-market contract costs through a reconciling mechanism in the RERP called the Renewable Energy Recovery Factor (“RERF”).²⁴¹ The Company proposes to apply the RERF to all retail distribution customers through a uniform cents-per-kWh charge (Exhs. NG-JAL at 7-8, 12; NG-JAL-2). In forecasting above-market contract costs, the Company proposes to use current basic service rates as a proxy for the market value of the energy, capacity, and RECs purchased under PPA-1 (Exh. NG-JAL at 7, 12). Accordingly, the forecasted above-market factor to be included in the RERF will be calculated by dividing (1) the difference between the contract price and the current basic service rate, by (2) the forecasted amount of electricity to be delivered to the Company’s retail delivery service customers over the recovery year (Exhs. NG-JAL at 12; NG-JAL-2, at 1; NG-JAL-3, at 2; Tr. 9, at 1861).

National Grid proposes to update the above-market factor and revise the RERF semi-annually to coincide with its implementation of new basic service rates (Exh. NG-JAL-2).²⁴² The Company proposes to reconcile the difference between actual and forecasted above-market contract costs annually through the existing BSAP (Exhs. NG-JAL at 9-10, 13; NG-JAL-1, at 2; NG-JAL-3, at 4).

²⁴¹ As discussed below, the RERF also includes factors associated with the recovery of contract remuneration.

²⁴² National Grid implements new basic service rates for residential and small C&I customers semi-annually on May 1st and November 1st.

2. Remuneration

The Company proposes to recover its remuneration associated with PPA-1²⁴³ through the RERF using a uniform cents-per-kWh charge to be assessed to all retail distribution customers (Exhs. NG-JAL at 12; NG-JAL-2). The Company will forecast the amount of remuneration to be recovered through the RERF annually and reconcile any over- or under-collection through the RERF²⁴⁴ (Exhs. NG-JAL at 14, 17-18; NG-JAL-2). The remuneration reconciliation factor would reflect the actual dollar amount of contract remuneration based upon the net payments the Company makes under PPA-1, compared to the billed revenue generated from the RERF associated with the contract remuneration factor (Exhs. NG-JAL at 17; NG-JAL-2).

C. Positions of the Parties

1. National Grid

National Grid contends that its proposed cost recovery method is consistent with Section 83²⁴⁵ and general ratemaking principles (National Grid Brief at 43). The Company

²⁴³ As discussed in Section X, above, the remuneration pursuant to Section 83 associated with PPA-1 is calculated annually as the product of the annual payments under the contract and a four percent remuneration rate (Exhs. NG-JAL at 10; NG-JAL-2).

²⁴⁴ The Company proposes to file its RERF reconciliation each year on January 15th for a rate change effective March 1st, at the same time it submits and changes the rates for its other, annual reconciling factors (Exh. JAL-2, at 2; Tr. 9, at 1862).

²⁴⁵ Section 83 states in pertinent part:

An electric distribution company may elect to use any energy purchased under such contracts for resale to its customers, and may elect to retain RECs for the purpose of meeting the applicable annual RPS requirements set forth in said section 11F of said chapter 25A. If the energy and

argues that Section 83 allows for the recovery of above-market costs from all customers when energy and RECs are sold, and that its proposed approach is consistent with this statutory authority (National Grid Brief at 43, citing Exh. AG-NG-3-1). National Grid argues that spreading the above-market cost among all customers is appropriate because PPA-1 advances the policy objectives of the Green Communities Act to the benefit of all customers (National Grid Brief at 43). Furthermore, National Grid contends that its proposal avoids a significant migration of customers from basic service to competitive supply and the resulting inequity of requiring those customers who cannot leave basic service to pay for the above-market costs of the contract (National Grid Brief at 44, citing Exh. NG-JAL-R at 3-6; National Grid Reply Brief at 22).

National Grid states that the proposed rate treatment is critical to the Company's moving forward with the transaction because if the energy and RECs are not allocated to basic service for the Company's "own use," National Grid would have to use derivative accounting,

RECs are not so used, such companies shall sell such purchased energy into the wholesale spot market and shall sell such purchased RECs through a competitive bid process. . . .

If the distribution company sells the purchased energy into the wholesale spot market and auctions the RECs as described in the fifth paragraph, the distribution company shall net the cost of payments made to projects under the long-term contracts against the proceeds obtained from the sale of energy and RECs, and the difference shall be credited or charged to all distribution customers through a uniform fully reconciling annual factor in distribution rates, subject to review and approval of the [Department].

St. 2008, c. 169, § 83, ¶¶ 5, 6; see also 220 C.M.R. §§ 17.06(1), (2).

whereby the Company would be required to record the net present value of the contract's estimated above-market cost as a loss (National Grid Brief at 44-45). National Grid argues that such accounting treatment would negatively affect the balance sheet of National Grid's corporate parent (National Grid Brief at 45, citing Exhs. AG-NG-2-27; AIM-NG-2-8; AIM-NG-2-12). National Grid asserts that it will not go forward with the contract if it is required to use derivative accounting and notes that PPA-1 will become effective only if the Company is able to allocate the energy and RECs to basic service (National Grid Brief at 45 & n.21, citing PPA-1, at 10-11; National Grid Reply Brief at 22-23).

The Company argues that its proposal will not change basic service pricing and, thus, there will be no impact on retail markets (National Grid Brief at 44; National Grid Reply Brief at 22-23, citing Exh. NG-JAL at 6-7). Because the Company will continue to establish basic service rates based on existing procurement and pricing practices, National Grid contends that basic service rates will remain at the average market price of electricity (National Grid Brief at 44). As such, National Grid argues that it has satisfied the requirements of Section 83 and also G.L. c. 164, § 1B(d), which requires basic service rates to "not exceed the average monthly market price of electricity" (National Grid Brief at 44, citing G.L. c. 164, § 1B(d)).

National Grid disputes AIM's and RESA's argument that the Company's proposal for recovering the above-market costs is not one of the options permitted by Section 83. National Grid argues that while Section 83 contains two options for allocating costs, only one of the options (selling energy and RECs into the competitive market) specifies a particular ratemaking treatment (National Grid Reply Brief at 20). Where the law mandates a particular ratemaking

method if one option is chosen, but is silent as to the ratemaking treatment for the other option, National Grid contends that the Department has the discretion to use its expertise to determine an appropriate ratemaking solution (National Grid Reply Brief at 20-21 & n.11, citing, e.g., 392 Mass. at 268).

Finally, National Grid disputes AIM's argument that the Company's proposal violates the ratemaking principle that costs should be allocated to the customers that benefit (National Grid Reply Brief at 21-22). National Grid contends that AIM's argument is premised solely on the fact that the energy and RECs will be accounted for under basic service (National Grid Reply Brief at 21). The Company contends, however, that basic service customers will not benefit from this accounting treatment in any way that is different from all other customers (National Grid Reply Brief at 21). Furthermore, National Grid notes that AIM's witness acknowledged that the environmental benefits of the contract will flow to everyone (National Grid Reply Brief at 21, citing Tr. 9, at 1918-1921, 1929-1930, 1932-1933, 1937). Because all distribution customers benefit from the contract, the Company maintains that it is appropriate to allocate contract costs to all customers (National Grid Reply Brief at 22, citing Exh. NG-JAL-R at 2-3).

2. Attorney General

The Attorney General argues that by enacting Section 83, the Legislature made the policy decision that it is appropriate to support the development of renewable energy (Attorney General Reply Brief at 11). The Attorney General states that, in making this policy decision the Legislature understood that renewable energy contracts are generally above market and that

customers should bear these costs in exchange for receiving the benefits of renewable energy (Attorney General Reply Brief at 11). In response to the arguments of AIM and RESA, the Attorney General notes that Section 83 does not state how a company should recover costs if it elects to retain energy and RECs (Attorney General Reply Brief at 12). In the absence of an express directive with respect to cost recovery, the Attorney General argues that the Department may reasonably interpret the statute to allow recovery of any above-market costs from all distribution customers (Attorney General Reply Brief at 12, citing Flemings v. Contributory Ret. Appeal Bd., 431 Mass. 374, 375 (2000); Police Comm'r of Boston v. Cecil, 431 Mass. 410, 413 (2000); Sch. Comm. of Wellesley v. Labor Relations Comm'n, 376 Mass. 112, 116 (1978). Finally, the Attorney General contends that the Company's cost recovery proposal is consistent with the overall intent of Section 83, which is to facilitate the financing of renewable energy facilities (Attorney General Reply Brief at 12, citing St. 2008, c. 169, § 83, ¶ 1).

3. Associated Industries of Massachusetts

AIM argues that Section 83 allows a distribution company either to use the energy and RECs for basic service or to sell the energy and RECs into the competitive market (AIM Brief at 21; AIM Reply Brief at 7). AIM contends that the unambiguous language of the statute permits a distribution company to allocate above-market costs to all distribution customers only under the second option, in which the products are sold into the market (AIM Brief at 21; AIM Reply Brief at 8, citing Gen. Elec. Co. v. Dep't of Env'tl. Prot., 429 Mass. 798, 802 (1999)). According to AIM, it is irrelevant whether the Company's proposed treatment is

“equivalent” to selling the products into the market because the statute does not permit the Company’s proposed allocation (AIM Brief at 22, citing Exh. NG-JAL-R at 6, lines 10-12; AIM Reply Brief at 9).

Next, AIM argues that National Grid should not be permitted to use G.L. c. 164, § 1B(d) to shift the above-market costs of a Section 83 contract from basic service customers to competitive supply customers (AIM Brief at 24). AIM contends that G.L. c. 164, § 1B(d) was intended to protect basic service customers from the risk that a distribution company would enter into above-market contracts (AIM Brief at 24). AIM states that nothing in G.L. c. 164, § 1B(d) allows a distribution company to shift the above-market costs of a contract entered into pursuant to Section 83 to other customers (AIM Brief at 24). AIM contends that this rate treatment does not accord with the law and is bad public policy because it allows basic service customers, who receive the benefits of the energy and RECs, to avoid paying for those benefits, and requires competitive supply customers, who do not receive the energy and RECs, to pay for 50 percent of the above-market costs (AIM Brief at 24).

AIM also notes that if a distribution company were to sell the energy and RECs into the competitive market, the calculation of above-market costs, and thus, the costs allocated to distribution customers, would be far less than under National Grid’s proposed approach (AIM Brief at 24). Specifically, AIM contends that if the products were sold into the market, the calculation of above-market costs would be the contract price minus the price that third-party purchasers would pay in the market for the products (as opposed to the average cost of electricity under National Grid’s proposed approach) (AIM Brief at 24). As a basis to

calculate above-market costs, AIM contends that this price would be far higher than the Company's average cost of electricity for basic service customers (AIM Brief at 24).

AIM next argues that the proposed rate design is contrary to public policy and the Department's ratemaking standards (AIM Brief at 26- 27, citing D.T.E. 99-60-C ("An underlying goal of the Department's [basic] service pricing policy is to ensure that, to the extent possible, [basic] service customers pay the full costs of providing that service.")). AIM claims that National Grid's proposed shifting of costs away from those customers who receive the contract benefits, basic service customers, to customers who do not receive the contract benefits, distribution customers, would undercut the competitive market, send inefficient price signals, and contravene the fundamental ratemaking tenet that costs should follow benefits (AIM Brief at 26-27). AIM further notes that because competitive supply customers already pay their supplier for renewable power contracts and RECs, Department approval of the Company's allocation method would result in competitive supply customers paying for the costs of renewable power twice (AIM Brief at 26-27).

AIM argues that the Department should not give any weight to the alleged impact of international accounting rules on the Company's balance sheet where the Company's cost recovery proposal contravenes the express intent of the law (AIM Brief at 28; see also AIM Reply Brief at 12, citing Commonwealth v. Lammi, 386 Mass. 299, 300 (1982)). AIM asserts that allowing a deviation from Section 83 here would open the door to arguments by distribution companies in other cases that their rate treatment is reasonable despite the fact that such rate treatment contravenes express statutory language (AIM Reply Brief at 12). AIM

notes that National Grid was an active stakeholder in the development of Section 83 and should have raised the accounting issue through that process instead of here (AIM Brief at 28; AIM Reply Brief at 10-11). Finally, AIM states that the remuneration Section 83 provides was intended to compensate the Company for balance sheet impacts unique to utilities, such as the stated adverse impact that derivative accounting would have to the balance sheet of National Grid's corporate parent (AIM Brief at 29).

4. Cape Light Compact

The Compact argues that National Grid's proposed rate treatment is not consistent with Section 83 and raises concerns about potential cross-subsidization and anti-competitive practices (Compact Brief at 2; Compact Reply Brief at 2). Nonetheless, the Compact recommends that if the Department approves National Grid's ratemaking proposal, the Department impose conditions, such as reporting requirements, in order to ensure that National Grid's practice of allocating energy and RECs and recovering costs conforms with the method National Grid has proposed (Compact Brief at 5-6; Compact Reply Brief at 2). The Compact states that such reporting is essential to ensure that National Grid recovers from its distribution customers only those costs that Section 83 authorizes (Compact Brief at 6). The Compact states that without such transparency and oversight, the Department will be unable to ensure that distribution customers are not subsidizing basic service customers (Compact Brief at 6, 8).

The Compact also asserts that if the Department approves National Grid's proposal, it should expressly limit its approval to the unique facts of this case (Compact Brief at 6-7; Compact Reply Brief at 2-3). The Compact notes that National Grid's proposed ratemaking

treatment for PPA-1 is driven by the claimed need of its parent company to meet international accounting standards (Compact Brief at 6, citing Exh. NG-MNM at 33). As National Grid's proposed ratemaking treatment is inconsistent with Section 83, the Compact requests that the Department establish that any approval of National Grid's ratemaking treatment here will not have any precedential effect in a subsequent proceeding (Compact Brief at 7). The Compact states that this is necessary to ensure that other distribution companies do not attempt to use this rate treatment in the future (Compact Brief at 2).

5. Retail Energy Suppliers Association

RESA argues that National Grid's proposed cost recovery method is contrary to the specific cost recovery directives of Section 83 (RESA Brief at 6). RESA contends that the plain language of Section 83 provides two alternative ratemaking approaches: (1) to use the energy purchased for resale to its customers and presumably recover the associated costs from those customers to the extent permitted by law; or (2) to sell the purchased energy into the spot market and charge or credit distribution customers with the above- or below-market costs (RESA Brief at 6-7). RESA contends that because National Grid proposes to use the products purchased for resale to its basic service customers, National Grid must charge its basic service customers, and not distribution customers, the above-market costs of the contract (RESA Brief at 7).

RESA also asserts that the Company's proposed cost recovery method violates cost causation principles due to the potential subsidization of basic service customers by distribution customers (RESA Brief at 5-6, citing Massachusetts Electric Company, D.T.E. 95-40, at 115

(1995)). Finally, RESA contends that the proposed sharing of above-market costs by basic service and distribution customers creates a lack of transparency that will impede the ability of competitors, regulators, and the public to evaluate the market impacts and ultimate success of the contract (RESA Brief at 5).

D. Analysis and Findings

1. Recovery of Above-Market Costs

As noted above, National Grid's proposed method of recovering the above-market costs of the products it purchases under PPA-1 is based on its need to comply with IFRS (Exhs. NG-MNM at 34; AIM-NG-1-10(a) at 15; Tr. 9, at 1857). Due to the lack of recognition of regulatory assets under IFRS, the Company must satisfy the "own-use" provisions of the IFRS or, it states, face a material reduction to retained earnings as a result of entering into the contract (Exhs. NG-MNM at 35; AIM-NG-1-10(a) at 15). For these reasons, the "own use" accounting treatment is a condition of PPA-1 and, without such treatment, National Grid has represented that it will not go forward with PPA-1 (Exhs. NG-MNM at 35; PPA-1, § 1 (definition, "Regulatory Approval")).

Although for accounting purposes the Company will (1) assign the energy purchased under PPA-1 to suppliers serving its basic service customers in the SEMA zone, and (2) use the PPA-1 RECs for complying with its basic service RPS obligation, the Company intends to procure basic service supply and establish basic service rates as it has in the past pursuant to the Department's well established policies (Exhs. NG-MNM at 32; NG-JAL at 4, 6-7; NG-JAL-R at 6, 7; AG-NG-3-1; AIM-NG-2-1). National Grid proposes to recover any

above-market costs of PPA-1 from all distribution customers (Exh. NG-MNM at 31). The Department must determine whether this proposed ratemaking treatment is appropriate. St. 2008, c. 169, § 83, ¶¶ 5, 6; see also 220 C.M.R. §§ 17.06(1), (2). As described above, Section 83 at ¶ 6 explicitly prescribes the cost recovery treatment if a distribution company exercises the second option enumerated in Section 83 and sells the purchased energy and RECs — the distribution company must credit or charge all distribution customers any above- or below-market costs of the contract. The statute is silent, however, with regard to the appropriate ratemaking treatment if a distribution company exercises the first option and retains the energy and RECs for its basic service customers, as National Grid proposes to do as an accounting measure in this case (Exhs. AG-NG-3-1; NG-MNM at 31).

In light of this statutory silence, we are not persuaded by the arguments of AIM, the Compact, and RESA that Section 83 expressly prohibits National Grid's proposed ratemaking treatment. Interpreting Section 83 to prohibit National Grid from recovering any above-market contract costs from distribution customers would require the Department to read words into Section 83 that the Legislature did not see fit to include. See 457 Mass. at 496 ("It is not the province of courts to add words to a statute that the Legislature did not choose to put there in the first instance."). We decline to do so and will, instead, exercise our judgment to determine what ratemaking treatment is appropriate.²⁴⁶ For the reasons discussed below, we find that National Grid's proposed rate treatment is appropriate and in the public interest.

²⁴⁶ See Alliance to Protect Nantucket Sound v. Energy Facilities Siting Bd., 457 Mass. 663, 682 (2010) (agency interpretation of a statute it is charged with enforcing entitled to deference where statutory language is unclear) (citing Alliance to Protect Nantucket

As we discuss above in Section VII.D, PPA-1 will provide economic benefits to all of National Grid's customers. The Department's long-standing ratemaking precedent requires that the customers who benefit should be the customers who pay. See, e.g., Commonwealth Electric Company, D.T.E. 99-90-C at 77-78 (2001); Investigation Into Pricing and Procurement of Default Service, D.T.E. 99-60-C at 13 (2000). National Grid proposes to recover the above-market costs associated with PPA-1 from all of its distribution customers (Exhs. NG-JAL at 5-6, citing D.T.E. 99-60-C; NG-JAL-2). National Grid claims that the benefits that basic service customers will realize from the contract will not differ from the benefits realized by all distribution customers (Exh. NG-JAL-R at 2-3). In contrast, AIM and RESA argue that, because the Company proposes to use the PPA-1 products for resale to (and the benefit of) its basic service customers, it must recover the contract's above-market costs from those customers (AIM Brief at 26-27, citing D.T.E. 99-60-C; RESA Brief at 5-6).

The premise underlying AIM's and RESA's arguments (i.e., that no customers other than basic service customers will benefit from PPA-1) is incorrect given the Company's

Sound v. Energy Facilities Siting Bd., 448 Mass. 45, 50-51 n.6 (2006) (“[T]he substantial deference owed to an agency’s interpretation of a statute it is charged to enforce includes approving an interpretation of statutory language that may be read in two ways”), and Town of Middleborough v. Hous. Appeals Comm., 449 Mass. 514, 523 (2007) (“Where the statutory language is not without ambiguity . . . , our deference to the agency’s interpretation of the governing statute is highest”); DiCicco v. Dep’t of Env’tl. Prot., 64 Mass. App. Ct. 423, 427-428 (2005) (agency had discretion to resolve enforcement action with a consent order where statute did not provide a mandatory or definite standard for enforcement actions); see also Attorney General v. Dep’t of Pub. Utils., 392 Mass. 262, 268 (1984) (“Where the result of employing a specific methodology in rate setting is not impermissible, the choice of the methodology is a matter committed to agency discretion”).

proposal in this case. The Company's proposed method of calculating the market value of the PPA-1 products and recovering that market value will have no material effect on basic service rates. Under the Company's proposal, the market value that the Company will ascribe to the energy purchased under PPA-1 will be equal to the revenue that the Company would receive if it were to sell the energy directly in the wholesale energy market (Exh. NG-MNM at 31-32). Moreover, with regard to the RECs purchased under PPA-1, it is reasonable to conclude that, with the exception of transaction costs, the market value that the Company will ascribe to the RECs under its proposal would be equal to the revenue that the Company would receive if it were to sell the RECs in the REC market. This is so because the Company proposes to establish the market value of the PPA-1 RECs based on the average price it pays for the non-PPA-1 RECs it purchases in the REC market for the purpose of complying with its basic service RPS obligation (Exh. NG-MNM at 31-32, 41). Therefore, under the Company's proposal, basic service customers will pay the same rates they would have paid absent PPA-1.²⁴⁷

Accordingly, AIM and RESA are incorrect in asserting that: (1) the PPA-1 benefits realized by basic service customers will be different from those realized by competitive supply customers; (2) competitive supply customers will be subsidizing basic service customers; and (3) the Company's proposed cost recovery treatment will have an adverse effect on the competitive supply market. The Company's proposal will not have any impact on the

²⁴⁷ As noted above, transaction costs associated with buying and selling RECs could have a small effect on basic service prices and the above-market contract costs.

competitive supply market because basic service rates will not change. Instead, basic service rates will remain the same and all customers will benefit in the same way from the products purchased pursuant to PPA-1. Therefore, we find that it is appropriate to recover any above-market costs of the contract from all distribution customers. See D.T.E. 99-90-C at 77-78; D.T.E. 99-60-C at 13.

Further, we find that National Grid's proposal to recover above-market costs from all distribution customers is reasonable because it is consistent with the rate treatment prescribed in Section 83 under the second option, pursuant to which a distribution company sells the renewable products from the contract into the market. Although National Grid is technically not selling the renewable products into the market, its proposed treatment with respect to recovery of the market value of PPA-1 is designed so that its retention of the Cape Wind energy and RECs for basic service for accounting purposes results in the same rate treatment that would result if the products were sold into the market (Exhs. NG-MNM at 32; NG-JAL at 4, 6-7; NG-JAL-R at 6; AG-NG-3-1; AIM-NG-2-1). The Legislature expressed a clear intent with respect to the ratemaking treatment to be applied if a distribution company sells the purchased products into the market (i.e., such costs are to be recovered from all distribution customers). St. 2008, c. 169, § 83, ¶ 6. Because of the similarities in National Grid's approach to what would occur if the products were sold into the market, we find that it is appropriate to adopt the cost recovery method specified for that option in Section 83. Therefore, for the reasons discussed above, we find that National Grid's proposal to recover

the above-market costs of PPA-1 from all distribution customers is appropriate and in the public interest.

2. Forecast and Reconciliation of Above-Market Costs

National Grid proposes to reconcile the difference between actual and forecasted above-market contract costs annually through its existing BSAP (Exhs. NG-JAL at 9; NG-JAL-1, at 2; NG-JAL-3, at 4). In forecasting above-market costs, National Grid proposes to use basic service rates as a proxy for the actual market value of the PPA-1 products (Exh. NG-JAL at 7, 12).

AIM argues that National Grid's proposal to use basic service rates as a proxy for the market value of the products in its forecast of above-market costs will result in greater above-market costs than if the Company sold the products into the competitive market (AIM Brief at 24). AIM is incorrect in this regard. The proxy used by the Company to forecast market value will have no effect on the above-market costs the Company eventually recovers from its distribution customers. To the extent the proxy inaccurately projects market value, this inaccuracy is accounted for in the reconciliation process. The Department seeks to set the proxy at the most accurate level to avoid the need for significant reconciliations, and finds that basic service rates are a reasonable proxy for the actual market value of the PPA-1 products.

With respect to the Company's proposal to reconcile the difference between forecasted and actual above-market contract costs through its BSAP,²⁴⁸ National Grid argues that this

²⁴⁸ This is in contrast to the reconciliation of the contract remuneration, which the Company proposes to recover through the RERF (Exh. NG-JAL at 17).

treatment is the most administratively efficient and transparent way to match revenues with costs (Exhs. NG-JAL at 10-13, 18; NG-JAL-3, at 4; Tr. 9, at 1862-1863). Because the Company will use basic service rates to establish the above-market cost of PPA-1, the Department agrees that reconciling the difference between actual and forecasted above-market contract costs through the BSAP is administratively efficient. Therefore, the Department approves the Company's proposal. However, the Department will consider going forward whether it would be more transparent for the above-market costs to be reconciled through the same mechanism in which these costs are recovered (i.e., the RERP).

Finally, with respect to National Grid's proposal to update the above-market factor and revise the RERF semi-annually to coincide with its implementation of new basic service rates, the proposed RERP tariff states that "the Company shall file its revised [RERF] semi-annually to reflect a revised estimate of above-market costs . . . *on or around the same time* it submits its basic service rate filings that include proposed basic service rates for its residential and commercial classes" (Exh. JAL-2, at 2) (emphasis added). The Company's BSAP tariff requires the Company to submit its basic service filing to the Department no later than 45 days prior to when basic service rates take effect. M.D.P.U. No. 1162-A, Sheet 2.

In order to provide sufficient time to investigate the Company's proposed RERF before it goes into effect, the Department directs the Company to revise its RERP tariff to state that the revised RERF will be filed semi-annually, at least 45 days before the RERF takes effect, consistent with the Company's BSAP tariff. The Company is to use the proposed basic service

rate as the basis for determining the proposed RERF. While the filings may be made simultaneously, the basic service filing must be made separately from the proposed RERF.²⁴⁹

3. Other Issues

The Compact recommends that the Department impose conditions on National Grid, such as reporting requirements, to ensure that in practice the Company recovers above-market costs in conformity with the method proposed (Compact Brief at 5; Compact Reply Brief at 2). The Department has found above that the recovery of above-market costs in the RERF through a per kWh charge on all distribution customers is appropriate. The Department will review the Company's actual recovery of above-market costs in the Company's annual RERF reconciliation filings. Our review of these filings will ensure that the Company recovers the above-market costs in the manner approved by the Department and, therefore, we find that no further reporting requirements are required at this time.

The Compact also argues that the Department's approval of National Grid's ratemaking treatment should be expressly limited to the unique facts of this case and should not have any precedential effect in a subsequent proceeding (Compact Brief at 6-7; Compact Reply Brief at 3). The Department recognizes that the method employed by National Grid in this case is based on IFRS accounting practices. In our review of future long-term contracts filed pursuant to Section 83, we will consider the facts presented in those cases in assessing the proposed rate treatment and the precedential value, if any, of the instant case.

²⁴⁹ Pursuant to D.T.E. 99-60-C at 8-9, the Department has five business days to review basic service filings to decide whether to initiate an investigation of the proposed rate. There is no such timing constraint attached to our review of the proposed RERF.

E. Conclusion

For the reasons explained above, the Department finds that the Company's proposed method of calculating the market value of the products it purchases under PPA-1, recovering the products' market value, and recovering the above-market contract costs is consistent with Section 83 and Department precedent, and is in the public interest and will result in just and reasonable rates pursuant to G.L. c. 164, § 94.²⁵⁰

XII. PPA-2

A. Introduction

National Grid requests that the Department also approve a second power purchase agreement between National Grid and Cape Wind, PPA-2. PPA-2 is identical to PPA-1 in most respects (Exh. NG-MNM at 12, 43). However, under PPA-2, National Grid has neither the right nor the obligation to make any purchases (Settlement Art. 2.1(D); Exh. NG-MNM

²⁵⁰ National Grid also requests that the Department:

authorize National Grid, to the extent needed in the future, to take appropriate steps to assure avoidance of a material negative balance sheet impact on National Grid's direct or indirect parent company, upon appropriate notice and filing with the Department, by proposing such other method requested by National Grid that reasonably addresses any such impact, subject to the review and approval of the Department (PPA-1, §§ 8, 1 (definitions, "Regulatory Approval," "Purchased Power Accounting Authorization"); see also National Grid Brief at 46).

National Grid is, in effect, requesting authorization to propose an alternative method of allocation of energy and RECs for Department review in the future. National Grid may propose an alternative method of allocation in the future, such proposal to be subject to review and approval by the Department. We will address the merits of any such proposal if and when National Grid files such a request with the Department.

at 13, 43). No sale or purchase can occur under PPA-2 until after National Grid has assigned that contract to another purchaser (Exh. NG-MNM at 13, 43).

PPA-2 is premised on the assumption that National Grid will assign the entitlement to the output covered by the agreement to a third party or parties before any deliveries of that output are made (Exh. NG-MNM at 12). PPA-2 is designed to put in place a fully negotiated agreement for the amount of the facility's output not covered by PPA-1 (Exh. NG-MNM at 12). National Grid is not asking the Department to make any decision to allow the Company to recover any costs of PPA-2 in this proceeding (Exh. NG-MNM at 13).

If PPA-2 were assigned to a Massachusetts electric distribution company, it would not be effective without separate Department approval. Pursuant to the settlement agreement, such review would be limited to a consideration of cost-effectiveness (Settlement Art. 2.1(D); Exhs. DPU-AG-1-2; DPU-NG-11-11). If PPA-2 is assigned to a non-jurisdictional entity, no Department approval would be necessary because Section 83 applies only to jurisdictional electric distribution companies.

B. Positions of the Parties

1. National Grid

National Grid argues that Department pre-approval of PPA-2 will help expedite or substantially reduce the length of time of a subsequent Section 83 proceeding (Exh. DPU-NG-11-6). While National Grid acknowledges that the assigned contract would require a new G.L. c. 30A adjudicatory proceeding before the Department, it states that the

PPA-2 price and other contract terms would not need to be re-litigated in that proceeding (Exhs. NG-MNM at 42; DPU-NG-11-6; DPU-NG-11-11).

National Grid also asserts that Department pre-approval of PPA-2 will help facilitate its assignment by providing a standard instrument that other buyers of power can use or adapt (Exhs. NG-MNM at 42; NG-SFT at 112). According to National Grid, Department pre-approval of PPA-2 will also help project financing by presenting financiers with a set of contracts with similar terms and conditions (Exhs. NG-SFT at 112-13; DPU-NG-11-4; DPU-NG-11-7). Finally, National Grid argues that Department pre-approval of PPA-2 will enhance the likelihood that the full project will be developed (Exh. DPU-NG-11-5).

2. Cape Wind

Like National Grid, Cape Wind argues that pre-approval of PPA-2 will expedite a future Department proceeding after PPA-2 is assigned (Exhs. CW-RBS at 7; CW-DJD at 9; DPU-CW-7-3). Cape Wind also asserts that Department pre-approval of PPA-2 will help facilitate the assignment of PPA-2 to other purchasers by establishing consistent terms, conditions, and pricing (Exh. DPU-CW-7-1; Tr. 3, at 530). While Cape Wind states that Department approval of PPA-2 is not a prerequisite to financing PPA-1, Cape Wind maintains that such approval could help facilitate financing (Tr. 3, at 538).

3. Attorney General

The Attorney General explains that the Settling Parties agreed to seek Department approval of PPA-2 in this proceeding (Settlement Art. 2.1(D); Exh. DPU-AG-1-2). The Attorney General asserts that Art. 2.1(D) provides protection to National Grid's customers

because they will not be bearing costs greater than those under PPA-1 (Exh. AG-JWJC-1, at 23). According to the Attorney General, the Settlement Agreement also provides protection to the developers and financiers of Cape Wind because the prices and terms of PPA-1 will apply directly to PPA-2, such that if any other Massachusetts electric distribution company decides to purchase a portion of the output associated with PPA-2, those prices will mirror those of PPA-1 and the issue of pricing and other contract terms will not be relitigated in a subsequent Department proceeding (Exhs. DPU-AG-1-2; AG-JWJC-1, at 23).

4. Cape Light Compact

The Compact agrees that if PPA-2 is assigned to a distribution company, that company would require Department approval of PPA-2 pursuant to Section 83 in a separate proceeding (Compact Brief at 2). The Compact submits, however, that any approval issued by the Department in this proceeding should be limited to the unique set of facts presented herein, and that there should be no precedential effect or estoppel with respect to consideration of PPA-2 in a future Section 83 proceeding (Compact Brief at 2).

5. CLF et al.

CLF et al. urge the Department to approve the basic parameters and structure of PPA-2 in this proceeding, but withhold final approval of PPA-2 until National Grid assigns PPA-2 (CLF et al. Reply Brief at 23). CLF et al. argue that after National Grid assigns PPA-2 the Department should perform a supplementary review in a less extensive proceeding focused on whether the net impacts of PPA-2 are reasonable in light of the particular ratepayer base in

question (CLF et al. Reply Brief at 23). CLF et al. note that this approach is essentially the approach proposed by the Settling Parties under the Settlement (CLF et al. Reply Brief at 23).

6. TransCanada

TransCanada urges the Department to reject PPA-2 without prejudice (TransCanada Brief at 7). TransCanada notes that there is currently no purchaser of power under PPA-2 (TransCanada Brief at 7). TransCanada asserts that if there is a purchaser in the future, the purchaser may submit a new petition for approval of PPA-2 and may submit testimony asserting that the second contract is cost-effective (TransCanada Brief at 7). At that time, intervenors should have a full opportunity to respond (TransCanada Brief at 7).

7. Alliance to Protect Nantucket Sound

Alliance urges the Department to reject PPA-2 because PPA-2 is not ripe for review in this proceeding (Alliance Brief at 48). Alliance asserts that PPA-2 is nothing more than an offer to sell, which is not a contract that can be approved by the Department under Section 83 or other authority (Alliance Brief at 48). Alliance notes that if the contract is assigned to a party that is not a Massachusetts distribution company, it will not be subject to the Department's jurisdiction (Alliance Brief at 48). Alliance argues that without knowing the identity of the future assignee, the Department cannot assess whether PPA-2 is cost-effective for the buyer or ratepayers or meets the other requirements of Section 83 (Alliance Brief at 48-49). Alliance also asserts that pre-approval of PPA-2 would be contrary to Department precedent, which Alliance contends requires a factual showing that a proposed contract will provide reliable service at the lowest cost to ratepayers (Alliance Brief at 49-50). Finally,

Alliance argues that approval of PPA-2 through this proceeding would violate the due process rights of the utility buyer's ratepayers, alternative suppliers, and other potentially aggrieved parties in that utility's service territory (Alliance Brief at 50).

C. Analysis and Findings

There is no dispute that National Grid has neither the right nor the obligation to make any purchases under PPA-2 (Exh. NG-MNM at 43; Settlement Art. 2.1(D)). Moreover, no sale or purchase can occur under PPA-2 until after National Grid assigns that contract to another purchaser (PPA-2, §§ 4.1, 8.4; Settlement Art. 2.1(D); Exh. NG-MNM at 43). Thus, National Grid asks the Department to take the unprecedented step of pre-approving a power purchase agreement before any entity has agreed to actually purchase any power under that agreement (Exh. DPU-CW-7-2; Tr. 3, at 527-528). We decline to do so for various reasons, discussed below.

First, it is possible that this contract will never need Department approval. For example, Department approval of PPA-2 will not be required if the contract is: (1) terminated by the current signatories; (2) not assigned; or (3) assigned to an entity over which the Department has no jurisdiction (PPA-2, § 8.5; Exh. DPU-NG-11-9; Tr. 3, at 525-526). Thus, reviewing PPA-2 without a counter-party would serve no purpose and be administratively inefficient.

Second, even if in the future National Grid assigns PPA-2 to an entity over which the Department has jurisdiction, we find that it is premature to "pre-approve" it now. We do not know who National Grid will assign the contract to or how many assignees there will be (Exh.

NG-MNM at 43; Tr. 3, at 536). We also do not know what the final terms of the contract will be after it is assigned, as Cape Wind and a future purchaser may modify the terms of PPA-2 after assignment (Exhs. DPU-NG-11-2; DPU-NG-11-3). Given that the final terms and parties are unknown, it is premature for the Department to review the contract in this proceeding.

Third, pre-approving the contract now will not avoid or perhaps even expedite a future Section 83 proceeding. National Grid, the Attorney General, and Cape Wind all agree that even if the Department “approved” PPA-2 in this proceeding, a contract assigned to a Department jurisdictional entity would not be effective without separate Department approval in a later adjudicatory proceeding pursuant to G.L. c. 30A and Section 83 (Settlement Art. 2.1(D); Exhs. DPU-NG-11-6; DPU-AG-1-2; CW-DJD at 9). They assert, however, that pre-approval of PPA-2 now would expedite or substantially reduce the length of time in the next proceeding (Exhs. CW-DJD at 9; NG-MNM at 42; DPU-AG-1-2). Specifically, they argue that certain issues would not be subject to review and challenge in a subsequent Department proceeding because those issues would have already been decided by the Department in this proceeding (Exhs. DPU NG-11-11; DPU-CW-7-3).²⁵¹ This argument fails to recognize, however, that a subsequent proceeding will involve a different purchaser and likely different intervenors (i.e., parties that may not have been substantially and specifically affected by a National Grid/Cape Wind contract may be substantially and specifically affected

²⁵¹ This is a collateral estoppel argument. Under the doctrine of collateral estoppel, if the same parties are involved, an issue which was litigated fully in an earlier action cannot be relitigated. See Martin v. Ring, 401 Mass. 59, 61 (1987) (the purpose of the doctrine of collateral estoppel is to conserve resources, prevent unnecessary costs associated with multiple litigation, and to ensure the finality of decisions).

by a contract between Cape Wind and another purchaser).²⁵² These new parties must have the opportunity to fully litigate whether the Department should approve PPA-2. Almeida v. Travelers Ins. Co., 383 Mass. 226, 229 (1981); Heacock v. Heacock, 402 Mass. 21, 23 (1988) (collateral estoppel does not apply unless the parties in the second action are the same as in the first action or in privity with a party to the first action). Of course, parties to a subsequent proceeding will be free to argue about the extent to which the Department's approval of PPA-1 here should guide the Department's decision regarding PPA-2.

Fourth, pre-approval of PPA-2 would not provide additional benefits that the Department's approval of PPA-1 in this Order does not already provide. National Grid, Cape Wind, the Attorney General, and CLF et al. argue that Department pre-approval of PPA-2 will help facilitate: (1) assignment of PPA-2; (2) project financing; and (3) development of a full project.

With respect to facilitating the assignment of PPA-2, National Grid may assign PPA-2 regardless of whether the Department approves it. Further as Cape Wind testifies, the real driver for encouraging contract assignment of PPA-2 is Department approval of PPA-1 (Tr. 1,

²⁵² Indeed, in this proceeding, the Department denied the request of the Compact to intervene as a full party, in part because the Compact's members are not National Grid customers and thus, not directly affected by the approval of the PPAs presently under review. Interlocutory Order on Appeal of Hearing Officer Ruling on Petitions to Intervene, D.P.U. 10-54, at 7 (August 20, 2010). In so ruling, the Department noted, however, that if another company takes assignment of PPA-2, the Compact may have standing to intervene in the Department's review of the assigned contract. Id. at 8. In that future proceeding, parties who are substantially and specifically affected by PPA-2 "will have the opportunity to fully litigate and argue how a decision in PPA 1 should or should not guide any subsequent proceedings." Id. at 9.

at 95-95, 140). Therefore, the Department's approval of PPA-1 should provide such encouragement.

Based on the parties' representations, the Department's pre-approval of PPA-2 is not a prerequisite for National Grid to move forward with PPA-1 nor is it a prerequisite for Cape Wind to attract financing for the project (Exhs. NG-MNM at 43; Tr. 1, at 142; Tr. 3, at 538). Thus, declining to pre-approve PPA-2 is unlikely to have negative effects on project financing.

With respect to facilitating the development of the full project and lowering costs, as we discussed in Section VI, above, we agree with the Settling Parties that it would be beneficial to ratepayers for the project to be built at its planned size of 468 MW. However, pre-approving a contract that imposes no obligation on anyone to buy any megawatts will not further that goal. Only when assigned will PPA-2 help lower the costs of the project (see Exhs. DPU-NG-11-7; DPU-CW-7-1). As noted above, nothing in this Order prevents Cape Wind from negotiating with potential buyers to sell the entire output of the facility or prevents National Grid from assigning PPA-2. Accordingly, for the reasons set forth above, the Department declines to pre-approve PPA-2.

XIII. ORDER

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

ORDERED: That the first 15-year power purchase agreement between Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, and Cape Wind Associates, LLC, filed pursuant to St. 2008, c. 169, § 83 and 220 C.M.R. § 17.00 et seq., for wind power and renewable energy certificates is APPROVED; and it is

FURTHER ORDERED: That the second 15-year power purchase agreement between Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, and Cape Wind Associates, LLC, filed pursuant to St. 2008, c. 169, § 83 and 220 C.M.R. § 17.00 et seq., is NOT APPROVED; and it is

FURTHER ORDERED: That the revisions to the Basic Service Adjustment Provision tariff, M.D.P.U. No. 1162-A, filed by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, on May 10, 2010, is ALLOWED; and it is

FURTHER ORDERED: That the proposed Renewable Energy Recovery Provision tariff filed by Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, on May 10, 2010, is DISALLOWED; and it is

FURTHER ORDERED: That Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, is directed to file a revised Renewable Energy Recovery Provision tariff in compliance with this Order within 14 days of the date of this Order; and it is

FURTHER ORDERED: That Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid shall comply with all other directives contained in this Order.

By Order of the Department,

/s/

Ann G. Berwick, Chair

/s/

Tim Woolf, Commissioner

/s/

Jollette A. Westbrook, Commissioner

An 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. G.L. c. 25, § 5.