

- Q1. Please provide the following information with your comments:
- a. Name of Organization
  - b. Type of Organization (Public/Industry/Advocacy/Other)
- 
- 

A1. Deepwater Wind is proud to be America's leading offshore wind developer. The company's path breaking Block Island Wind Farm is the first in the nation. Led by a veteran management team with experience in developing complex energy projects worldwide, Deepwater Wind is making offshore wind in America a reality.

Headquartered in Providence, RI, we are actively planning offshore wind projects to serve multiple East Coast markets located 15 or more miles offshore, including New York, Massachusetts, Rhode Island, Maryland, and New Jersey.

- Q2a. Section 83C of Chapter 169 of the Acts of 2008 (“Section 83C”), as amended by Chapter 188 of the Acts of 2016, An Act to Promote Energy Diversity, requires a solicitation to be issued by June 30, 2017, including a timetable for the solicitation. Please respond to the following questions regarding the timetable:
- i. How much time do bidders need to develop proposals?
  - ii. What market conditions (technology, vessels, local supply chain, etc.) or ongoing data collection might necessitate a shorter or longer time period for proposal development?
- 
- 

- A2ai. Given that the Commonwealth will be publishing a draft of the RFP and PPA in advance of the opening of the solicitation, three (3) months is an adequate period of time for bidders to prepare comprehensive and responsive proposals.
- A2aii. The Commonwealth has been one of the largest and most sophisticated purchasers of onshore renewable energy for over a decade. In this time, the Commonwealth has consistently allowed developers approximately three months to develop and submit proposals. This approach has been successful with onshore renewables and it will be successful with offshore wind. Deepwater Wind sees no reason to justify a longer period to develop proposals.

- Q2b. Section 83C allows the use of a staggered procurement schedule and, if applicable, specifies that a subsequent solicitation “shall occur within 24 months of a previous solicitation.
- i. How should the timing of future solicitations be staggered in time?
  - ii. What market conditions (technology vessels, local supply chain, etc.) or ongoing data collection should be considered when determining the timeframe of future solicitations?
- 
- 

A2b. There are two fundamental forces at tension in a procurement such as this:

1. The Need for Certainty: Developers and their vendors require commercial certainty before making the significant investments in a local supply chain that are necessary to reduce the cost of offshore wind. This calls for more frequent procurements, so as to establish this certainty as soon as practicable.
2. The Need for Flexibility: Developers and vendors need flexibility in construction and operations to respond to market conditions, including those described above. This calls for staggered construction (so the Commonwealth’s projects don’t compete with each other for critical infrastructure) and flexible In-Service dates (so projects can get react to changes in the global supply chain).

To obtain the most cost-effective offshore wind, the Commonwealth should balance these two forces by separating the schedule of procurement from the schedule for construction. Specifically, the Commonwealth should conduct procurements once each year until the full 1,600 MW of capacity has been fully contracted for In-Service dates that are (i) staggered by 2 years and (ii) allow the developer to delay for 1 year without penalty. For example:

- 1<sup>st</sup> Procurement in 2017 for 400 MW with an In-Service Date in 2023 – 2024
- 2<sup>nd</sup> Procurement in 2018 for 400 MW with an In-Service Date in 2025 – 2026
- 3<sup>rd</sup> Procurement in 2019 for 400 MW with an In-Service Date in 2027 – 2028
- 4<sup>th</sup> Procurement in 2020 for 400 MW with an In-Service Date in 2029 - 2030

This approach allows for the greatest rate of cost decline for the following reasons:

- It provides the visible pipeline of demand that is necessary to cultivate a local supply chain.
- It provides a longer planning horizon and more opportunities to stimulate competition within the supply chain, especially for projects with later In-Service dates.
- It allows for the sequential scheduling of critical infrastructure, such as the New Bedford Marine Commerce Terminal, without projects overlapping.
- It provides developers with the flexibility to schedule their project’s In-Service date to respond to the market conditions described above.

- Q3. Section 83C requires that the initial procurement be issued by June 30, 2017, and any individual solicitation “shall seek proposals for no less than 400MW of aggregate nameplate capacity of offshore wind energy generation resources.” In each of your responses, please include an explanation of how your suggested approach would lead to a more cost-effective result for ratepayers.
- What is the maximum megawatts of aggregate nameplate capacity that should be sought in the initial solicitation under Section 83C? Should the initial solicitation request minimum megawatts of aggregate nameplate capacity greater than the statutory requirement of 400MW? If so, why?
  - What considerations should be taken into account in deciding the size of this initial solicitations and, if applicable, the size of future solicitations?
  - Based on your response to the previous question (3b), what minimum and/or maximum megawatts of aggregate nameplate capacity of offshore wind energy generation (“OSW”) resources should be sought in future solicitations?
  - Recognizing that Section 83C calls for proposals no less than 400MW of aggregate nameplate capacity of OSW resources, what are the pros and cons including impacts to the market and to the cost to ratepayers of selecting multiple bids with individual project sizes less than 400 MW.
  - What potential future changes in the market should be considered in determining the size of aggregate nameplate capacity of OSW resources sought in future solicitations?
- 
- 

- A3. Offshore wind can become southern New England’s most cost-effective new source of energy and capacity. With the right policies, the market can evolve to be capable of delivering future offshore wind projects at costs that are competitive with other baseload generation technologies in New England. And, the incremental nature of installing wind turbines can, with the right policies, allow future offshore wind farms to be installed at smaller sizes than other new baseload plants, providing utility planners with an unprecedented level of flexibility.

With this potential in mind, we suggest that the most beneficial application of the 1,600 MW procurement is catalyzing the market to be capable of delivering increasingly smaller offshore projects at increasingly competitive prices so that by the time the 1,600 MW of procurement authority is exhausted, future offshore wind projects can be developed in response to market demand, without the need for subsidy or special procurements. Accordingly, the design of procurements must consider their impact on both (i) the costs and benefits of the project(s) being procured, and (ii) the future market for offshore wind.

- A3a. Not enough data exists to answer this question definitively today. This first solicitation will be only the second time that multiple offshore wind projects have competed on the basis of price<sup>1</sup>. Accordingly, the Commonwealth should use this first procurement as an opportunity for price discovery by requiring that, in order for a proposal to be deemed responsive and eligible for consideration, that each bidder must provide a binding bid with prices for at least three project sizes:
- 400 MW, consistent with Section 83C
  - A size that is smaller than required by Section 83C. We recommend 200 MW so that, if the Commonwealth finds reason to select multiple smaller projects, two projects could satisfy the requirements of Section 83C.

---

<sup>1</sup> The first being the competition between Deepwater Wind and US Wind in Maryland that, at the time of this submission, is still on-going.

- A size that is larger than Section 83C to test whether larger projects are preferable to smaller projects. We recommend 600 MW, because the largest offshore wind farm in the world today – the London Array – is 630 MW, and that project had the benefit of over a decade of local supply chain development. Soliciting larger proposals could constitute another massively risky, unprecedentedly-large project that would face all of the financing challenges of Cape Wind.

This approach – requiring that bidders offer pricing for multiple project sizes – will allow greater visibility into how each competitor views the intersection between scale and cost.

A3b. As detailed in A3a above, we strongly encourage the Commonwealth to be flexible in the sizing of this first procurement, as well as subsequent future procurements, by requiring that bidders offer binding bids for at least three project sizes. Doing so will allow the Commonwealth to select the total amount to be procured, as well as the project or combination of project procured, based on a more robust set of pricing data, which has a number of benefits:

- Protects ratepayers by allowing for consideration of the tradeoff between potentially lower pricing for purchasing more capacity now versus delaying ratepayer impact and taking advantage of declining cost curves.
- Provides an opportunity to consider the strategic benefits of selecting multiple smaller projects versus one larger project.
- Allows for consideration of impacts on the local supply chain of projects of various sizes.
- Promotes greater competition.

For developers, it is a small additional level of effort to prepare multiple alternative prices that by no means constitutes an undue burden.

A3c. See our response to A3a.

A3d. The strategic benefits of multiple awards, each smaller than 400 MW are significant and include the following:

- Less concentrated operational and financial risk by using multiple developers to deliver the targeted capacity
- Protect the market from any one incumbent monopolizing market share, reducing competition and thereby increasing cost to ratepayer
- increased potential for future competition
- Foster increased innovation
- Increase the amount of private investment in infrastructure
- the relative inefficiency of two projects happening simultaneously would lead to more job creation
- Keeps the supply chain in offshore wind trained on Massachusetts
- relieves the financial market pressure from the necessity of finding 400 MW scale projects massive chunk of tax equity appetite in an already overburdened U.S. tax equity market

These strategic benefits are significant and should be considered in the context of promoting a competitive future market for offshore wind that results in a low-cost resource that can compete with other new sources of baseload generation. This is justification for requiring bidders to submit multiple binding prices, include one for as little as 200 MW. In its evaluation, the Commonwealth should weigh that cost premium, if any, for smaller projects, against these strategic benefits.

A3e. Design of future solicitations should take into account the following factors:

- As it relates to the individual project (Quantitative)...
  - Price in \$ / MWh terms, relative to other projects and prior procurements
  - Impact on Ratepayers
  - Net Benefits, accounting for economic development and environmental benefits
  - Impact on compliance with requirements of Section 83C and other regulations
- As it relates to the local supply chain (Qualitative)...
  - Does the schedule conflict with other project proposed for MA?
  - Does it promote the development of local, self-sustaining industry in MA?
  - Does it foster the potential for greater future competition and cost-effectiveness?
  - Does it support making offshore wind a more cost-effective resource in the future?

- Q4. Section 83C requires the evaluation team to carefully review of any transmission costs associated with a bid. Please respond to the following questions regarding the evaluation of related transmission costs. What documentation and information should bidders provide in order to demonstrate the reasonableness of their transmission costs estimates included in their bid?
- a. Please describe, in detail, how transmission cost risks should be analyzed in the quantitative portion of the bid evaluation.
  - b. What type of cost containment features might a bidder use to ensure that transmission cost overruns, if any, are not borne by ratepayers as required by the statute?
- 
- 

- A4. Developers should be required to submit an independent cost study identifying their expected costs of developer attachment facilities, transmission owner attachment facilities and system-wide upgrades.

Developers should not be compelled or encouraged to submit interconnection requests to provide ISO-NE interconnection studies. Given the limited number of points of interconnection, interconnection costs are likely to be substantially the same for comparably-sized projects. Additionally, given that interconnection is a standard process of ISO-NE, and that no developer will have definitive interconnection rights until they have executed an interconnection services agreement, accepted their cost responsibility and provided the required deposit to ISO-NE, encouraging multiple developers to submit competing interconnection requests will not provide any meaningful cost or schedule benefits to the Commonwealth's ratepayers.

- A4a. Developers should be asked to identify whether and to what extent the cost of developer attachment facilities, transmission owner attachment facilities and system-wide upgrades will be borne by the developer or to what extent the developer will seek to recover the cost of any or all as a pass-through to ratepayers in the PPA. Doing so will allow the Commonwealth to evaluate bids on the basis of the fixed price of offshore wind, and a risk-adjusted interconnection cost.
- A4b. Developers should be encouraged to propose cost containment mechanisms.

- Q5. Please respond to the following interconnection-related questions:
- a. How should the procurement be structured to allow reasonable evaluation of bids that have not completed the ISO-NE I.3.9 process?
  - b. For bids that have not completed the ISO-NE I.3.9 process, what information, such as technical reports or system impact studies that closely approximate the ISO-NE interconnection process, should the procurement require from bidders to allow a complete evaluation of bids and associated risks, costs, and benefits?
  - c. What documentation should the procurement require bidders to provide that demonstrates the reasonableness of their estimates for interconnection costs and deliverability costs (costs of network upgrades including reactive compensation, and voltage control to compensate for cable charging)?
  - d. What other cost containment information should the solicitation require bidders to provide to allow for a complete evaluation of bids and associated risks, costs, and benefits?
  - e. What potential impact, if any, does the cluster interconnection analysis being developed by ISO-NE have on developing transmission costs and/or transmission planning for OSW?
- 

- A5. As detailed in A4 above, developers should be required to identify the cost of their developer attachment facilities, transmission owner attachment facilities and system-wide upgrades. These assessments should be supported by an independent report from a qualified engineering firm attesting to interconnection feasibility and the cost of each of the aforementioned interconnection upgrades. Developers should be asked to explicitly state what portion, if any, of each of these costs has been included in their proposed pricing and what portion they are seeking to recover from ratepayers as a pass-through in the PPA.

Developers should not be compelled or encouraged to begin the ISO-NE interconnection process and no developer should be prejudiced based on the status of their interconnection request. As further detailed in A4 above, no developer will have definitive interconnection rights until they have executed their interconnection agreement, accepted their cost responsibility and provided the required deposit to ISO-NE. Because such costs could be in the millions of dollars, it is unlikely that any developer will be in the position to establish such rights without having first received a PPA. As such, encouraging developers to pursue interconnection before a PPA has been awarded and negotiated would only serve to further crowd the interconnection queue and make it more difficult to accurately assess the true cost of interconnecting a single project.

Under the approach proposed here, in which the developer clearly identifies what costs are borne by the project and which are passed through to ratepayers, cluster studies should have no impact on the procurement planning for offshore wind because the interconnection upgrades for comparably sized projects should be approximately the same. Accordingly, in evaluating project bids, this approach allows the Commonwealth to evaluate the robustness of the developer's proposed cost containment methodology rather than the unknowable and undifferentiable cost of upgrades.

Q6. Section 83C requires that projects must be “cost effective to electric ratepayers in the Commonwealth over the term of the contract.” What could bidders include in their proposals to ensure that the long-term contracts for OSW will be the most cost effective to ratepayers

---

---

A6. As detailed in A3 above, we hold that the objective of this 1,600 MW project should be that, by the end of the procurement, utility-scale offshore wind projects are cost-competitive with other new forms of baseload generation in southern New England. Under this approach, the most important measure of cost-effectiveness for an individual project in this program is the extent to which that project helps to create a marketplace in which future offshore wind farms represent southern New England’s lowest-cost new source of energy and capacity.

Q7. Section 83C requires one or more procurements of OSW and requires that long-term contracts be “cost effective to Massachusetts electric ratepayers” and “avoid line losses and mitigate transmission costs to the extent possible” and ensure that transmission cost overruns, if any, are not borne by ratepayers.” The transmission needed to deliver OSW generation resources to shore could have a significant impact on customer costs, benefits, and risks. Please address the following questions:

- a. What potential approaches related to the transmission portion of the RFP(s) should be considered when designing the RFP to achieve the total OSW procurement goals of Section 83C? For example, potential approaches might include requiring each generation bidder to fulfill its own transmission needs (either with other bidders, with partners, or by themselves) or might include delivery to a common off shore delivery point. Full descriptions of each potential approach would be helpful.
- b. Identify the pros and cons of each with particular focus on consumer costs, benefits, and risks.
- c. What elements of each option might increase or reduce customer benefits to the greatest extent? What elements might increase or reduce customer risks? Please explain your answers.
- d. How might these approaches be affected by the size and timing of Section 83C solicitations?
- e. The RFP could require an additional bid that assumes the bidder’s OSW facilities interconnect at a pre-defined transmission point constructed at an off-shore location by a Transmission Developer. If included in the RFP, the bid would be in addition to the requirement for each bidder to provide a proposal in which its OSW facilities would interconnect to the existing on-shore transmission network. On the assumption that the RFP includes such an off-shore proposal, please address the following questions:
  - i. What elements of this approach might increase ratepayer benefits to the greatest extent? What elements might reduce ratepayer benefits? Please explain your answers.
  - ii. What minimum level of technical information regarding such a pre-defined off shore location will bidders need in order to allow them to provide accurate and complete bids based on this scenario? Please explain.
  - iii. What additional (i.e., non-technical) information will bidders need in order to allow them to provide accurate and complete bids based on this scenario? Please explain.
  - iv. What such approach will allow the most efficient and cost-effective result? What circumstances or approaches could potentially diminish the efficiency or cost-effectiveness of such a network expansion? Please explain your answers.
- f. Describe what other mechanisms or requirements should be considered for reducing the short-term and long-term costs of transmission interconnecting OSW facilities. For example, are there steps that could be required for transmission associated with the first OSW project that could reduce overall costs to ratepayers when subsequent OSW project(s) and their associated transmission are built?

- A7. Requiring any specific form of collective transmission at this stage of the development of offshore wind in Massachusetts would not only dampen competition and innovation, but also would likely jeopardize the ability of projects to attract cost-effective financing.

To attract such financing, developers must demonstrate that they have the ability to control the schedule on which the offshore transmission made available. While it is true that multiple European countries now have successful independent ownership of offshore transmission, it is important to note that in the case of the largest market – the UK – that developers have the right to control the development of the transmission infrastructure through commissioning of the wind farm. It is also important to note that in the case of Germany, the first large-scale offshore wind project – Meerwind – was put in a state of severe financial distress when the utility owner of offshore transmission failed to complete their offshore transmission system on time for the wind farm. Accordingly, for the first project(s) in Massachusetts, it is critical that the developer have the ability to control the development of the transmission line.

Recognizing that each developer may have unique ideas regarding transmission, we encourage the Commonwealth to not compel developers to provide pricing for a proscriptive transmission solution, but rather to encourage developers to provide their own ideas. This approach will surely promote greater innovation and competition.

Q8. Section 83C requires that projects “adequately demonstrate project viability in a commercially reasonable timeframe.” How should the solicitation address this requirement? Please address the following questions:

- a. The RFP may require all proposals to meet an in-service date for generation, what is the earliest that date should be?
- b. Should proposals that commit to an earlier commercial operation date be favored over projects with later commercial operation dates? Please provide reasoning to support your response.
- c. In a construction plan what documentation should bidders be required to provide to reasonably inform the evaluation team about the project’s viability?
- d. How should logistical constraints be addressed in the solicitations relative to such things as port constraints, availability of vessels, etc.?
- e. What information should the solicitation require regarding site control for proposed transmission routes, points of interconnection to the grid, and port locations for staging?

---

A8. Reference is made to A2b above, specifically our recommendations regarding procurement scheduling.

A8a. As detailed in A2b above, the commission should separate the procurement and construction schedules, and allow for flexibility in the In-Service dates. This will promote: (a) the firm, visible pipeline of demand that is necessary to promote the local supply chain and reduce the cost of offshore wind; as well as (b) the operational flexibility necessary to avoid conflicts between projects. The earliest In-Service date for a project receiving a fully-approved, un-appealable PPA in 2018 should be 2023, and should provide flexibility to achieve In-Service in 2024 without penalty.

A8b. No. The Commonwealth should not favor proposals identifying earlier In-Service dates for several reasons

- Doing so would encourage respondents to be overly optimistic about project schedules.
- It would discourage the critical work of engaging stakeholders to build true consensus about projects.
- It provides no material benefits to the development of the local supply chain.
- It accelerates ratepayer impacts unnecessarily and without a tangible benefit.

A8c&d. Developers should provide an construction and operations plan that, upon review by the Commonwealth, is found to be reasonable.

A8e. Developers should provide a permitting and site control acquisition plan that, upon review by the Commonwealth, is found to be reasonable.

Q9. Section 83C stipulates that DPU shall not approve a contract from a subsequent solicitation “if the levelized price per MWh, plus associated transmission costs, is greater than the levelized price per MWh plus transmission costs that resulted from the previous procurement.” Please address the following question:

- a. What information should the solicitation require, that is different from information that would already be provided on bid parameters and pricing for a specific bid category, to enable an accurate and transparent estimate of the levelized price of energy?

---

A9. Two additional pieces of information are required:

- Cost of Transmission Upgrades – As detailed in A4, developers should be required to disclose their anticipated costs of developer attachment facilities, transmission owner attachment facilities and system-wide upgrades. Regardless of the developer’s proposed method of recovering these costs (i.e. whether in the PPA price or as a pass-through), these costs should be excluded from the calculation of long term cost decline because these are costs that any other new generator would incur. These costs are outside of the control of the offshore wind industry and as such, should not be factored in the calculation of cost-reductions.
- Discount Rate for NPV Calculations – Another factor that is outside of the control of offshore wind developers is the market cost of capital. Because each developer offers its own cost of capital, it is unreasonable to normalize capital costs between developers. However, overtime, costs between contracts over time can be compared by selecting the discount for the Commonwealth’s calculation of Net Present Value based on the then-current Weighted Average Cost of Capital of all EDC’s in the Commonwealth. Doing so will adjust the current NPV calculation to account for current capital market conditions.

Q10. Section 83C requires that the clean energy resources to be used by a developer under the proposal to contribute to reducing winter electricity price spikes. How would bidders demonstrate that proposed long-term OSW contracts can meet this requirement? How should the evaluation process consider bids that cannot demonstrate an ability to meet this requirement?

---

---

A10. Wind power is an intermittent resource. No project can make a definitive commitment to reducing winter peak demand at a given point in time. Therefore, this factor should not be considered in deciding between project proposals.

Q11. Given that Section 83C allows “offshore wind energy generation resources to be paired with energy storage systems”, please respond to the following questions regarding the evaluation of the potential benefits associated with storage being paired with an OSW project:

- a. Should the Section 83C bid evaluation process quantitatively evaluate the potential benefits associated with storage paired with OSW resources potential qualification and participation in other ISO-NE markets, (e.g., ancillary services market)? If so, what methodology should the evaluation team utilize to ensure all the benefits are captured?
- b. Where would energy storage systems potentially be located, and what options should be allowed for ownership and/or operation?
- c. Should the operation of storage be completely associated with the OSW project or be allowed to sell services into the ISO-NE markets outside of operation of the OSW project?

---

A11. No. Energy storage is an emerging technology with great potential. However, it is most cost-effective when procured under long-term, stand-alone capacity contracts. We encourage the Commonwealth to adopt an energy storage procurement program similar to California’s SGIP program.

Q12. Section 83C states that where possible, proposals should mitigate any environmental impacts. Please address the following regarding this provision:

a. Identify and describe the environmental impacts associated with the installation of underwater transmission cables in state waters. Describe recommended mitigation strategies and explain what commitments and information a bidder should provide to demonstrate that it will mitigate the identified environmental impacts.

Recognizing that the U.S. Bureau of Ocean Energy Management requires developers (as part of their Construction & Operations) to submit a decommissioning plan and post a bond to address decommissioning that is held by BOEM during life of the project, are there additional considerations that a developer should provide in their proposal toward mitigation of decommissioning cost responsibility for ratepayers?

b. Describe any other environmental impacts that should be considered in evaluating the proposals and the documentation needed to demonstrate mitigation of impacts.

---

A12. As demonstrated on the Block Island Wind Farm, Deepwater Wind is fully committed to understanding the potential impacts of offshore wind development to sensitive marine species and to working collaboratively with agencies and other interested stakeholders to find ways to minimize impacts to marine species and habitat.

The installation of the submarine cable will cause a short term localized impact and associated sediment disturbance. The level of impact is dependent on the type of seafloor where the cable is being laid. The Bureau of Ocean Energy Management's requirements are comprehensive and even exceed standards for what would normally be required for a submarine cable installation under state regulations.

Q13. Section 83 states that, where feasible, a project should “create and foster employment and economic development in the Commonwealth”. Please address the following:

- a. Describe employment and economic development in the Commonwealth that an offshore wind development might foster.
- b. Describe what steps might be taken by a developer to foster such employment and economic development in the Commonwealth.
- c. What information should be required to demonstrate the local economic development benefits of a project?
- d. Should a supply chain plan be required? Please provide reasoning to support your response, including any information that could be required in the supply chain plan?

---

A13. Developers should be required to submit a detailed plan for economic development supported by and independent assessment of economic benefits. This independent assessment should incorporate analysis from an Input-Output model to quantify the direct, indirect and induced economic development benefits associated with the project.

Q14. Section 83C requires the DOER to give preference to “proposals that demonstrate a benefit to low-income ratepayers in the Commonwealth without adding cost to the project.” Please describe the minimum requirements a bidder should demonstrate to meet this standard.

---

---

A14. The best way to benefit low-income residents of the Commonwealth is by promoting the development of offshore wind as a cost-effective new source of energy supply. However, we would encourage the Commonwealth to be explicit in the solicitation with ways by which additional offshore wind benefits might be developed for low-income residents.