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Offshore Wind Procurement

The Driver of Economy-Wide Decarbonization

Paul J. Hibbard
Megan Accordino, Ph.D.

Analysis Group, Inc.

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About the Authors

Paul J. Hibbard, a Principal at Analysis Group, is a former Chairman of the Massachusetts Department of Public Utilities and has held positions in both energy and environmental agencies in Massachusetts. During his tenure on the Commission, Mr. Hibbard oversaw the initial development of the framework for the competitive procurement of low- and zero-carbon resources in Massachusetts, served as a member of the Massachusetts Energy Facilities Siting Board, and testified before Congress, state legislatures, and federal and state regulatory agencies. Mr. Hibbard is now a Principal in Analysis Group's Boston office and has public and private sector experience in energy and environmental technologies, economics, market structures, and policy.

Megan Accordino, Ph.D., a Vice President at Analysis Group, is an economist specializing in advising clients in energy and finance-related litigation and regulatory matters. Her expertise spans competition-related matters, ratemaking cases, litigation, and policy research. In particular, Dr. Accordino has analyzed market power in mergers and market-based rate authority applications in the electric industry and analyzed allegations of market manipulation in electricity, natural gas, and other commodity markets. Her ratemaking experience includes developing a cost-of-service study, analyzing investment and operational decisions under regulatory principles, and analyzing utility rate plans in light of market conditions and their impacts on stakeholders. Dr. Accordino has also analyzed liability, loss causation, and damages in numerous litigation matters. Dr. Accordino has authored articles on the impact of overlapping greenhouse gas emissions policies (published in *The Energy Journal*), market definition in electric power markets (published in the *ABA Economics Committee Newsletter* and *The Electricity Journal*), and the incentives for and detection of market manipulation.

About Analysis Group

Analysis Group is one of the largest economics consulting firms, with over 1,200 professionals across 14 offices in North America, Europe, and Asia. Since 1981, Analysis Group has provided expertise in economics, finance, analytics, strategy, and policy analysis to top law firms, Fortune Global 500 companies, government agencies, and other clients. The firm's energy and climate practice area is distinguished by its expertise in economics, finance, market modeling and analysis, economic and environmental regulation, analysis and policy, and infrastructure development. Analysis Group's consultants have worked for a wide variety of clients, including energy suppliers, energy consumers, utilities, regulatory commissions, other federal and state agencies, tribal governments, power system operators, foundations, financial institutions, start-up companies, and others.

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I. Executive Summary

Over the past two decades, a growing number of states have enacted mandates to reduce and eventually eliminate greenhouse gas (GHG) emissions from their economies, primarily through electrification of the transportation and building sectors. To successfully meet these mandates, power systems must meet rapid demand growth through large-scale deployment of carbon-free electricity. For many coastal states, there is no reasonably priced resource other than offshore wind (OSW) to fill the next large block of power sector decarbonization; without it, states' GHG emission reduction efforts will fail. However, shortcomings in initial procurement mechanisms coupled with the impact of exogenous and unpredictable events in the industry have slowed down the development and construction of OSW. Consequently, creating efficient and cost-effective OSW procurement mechanisms is crucial to achieving economy-wide decarbonization and developing OSW at reasonable cost to ratepayers.

OSW solicitations in the United States have taken on many different forms. Since the first procurement mechanism was enacted in the Commonwealth of Massachusetts in 2016, states have been refining these solicitations, taking lessons learned in one procurement cycle and applying them to the next. Most recently, states have developed tools to respond to exogenous factors that have impacted the OSW industry, including rising interest rates and increased project costs due to OSW demand growth and global supply-chain constraints. Policy makers continue to balance the need to lock in competitive long-term contracts that deliver long-term value to ratepayers with the need to adjust to varying market conditions to attract capital investment to the sector. This balance is especially critical given the long development timelines and intense capital requirements to bring these projects to market. Investor interest in the sector remains strong, but to-date capital deployment has been slowed due to procurement and contracting challenges.

Similarly, as available transmission capacity in the eastern Independent System Operator/Regional Transmission Organization (ISO/RTO) regions will be quickly absorbed by the first wave of OSW projects, states have increased their coordination with each other and regional grid operators to identify solutions to interconnecting the next wave of projects. It is imperative that such coordination be continued and deepened to ensure cost-effective and reliable interconnection of future OSW projects.

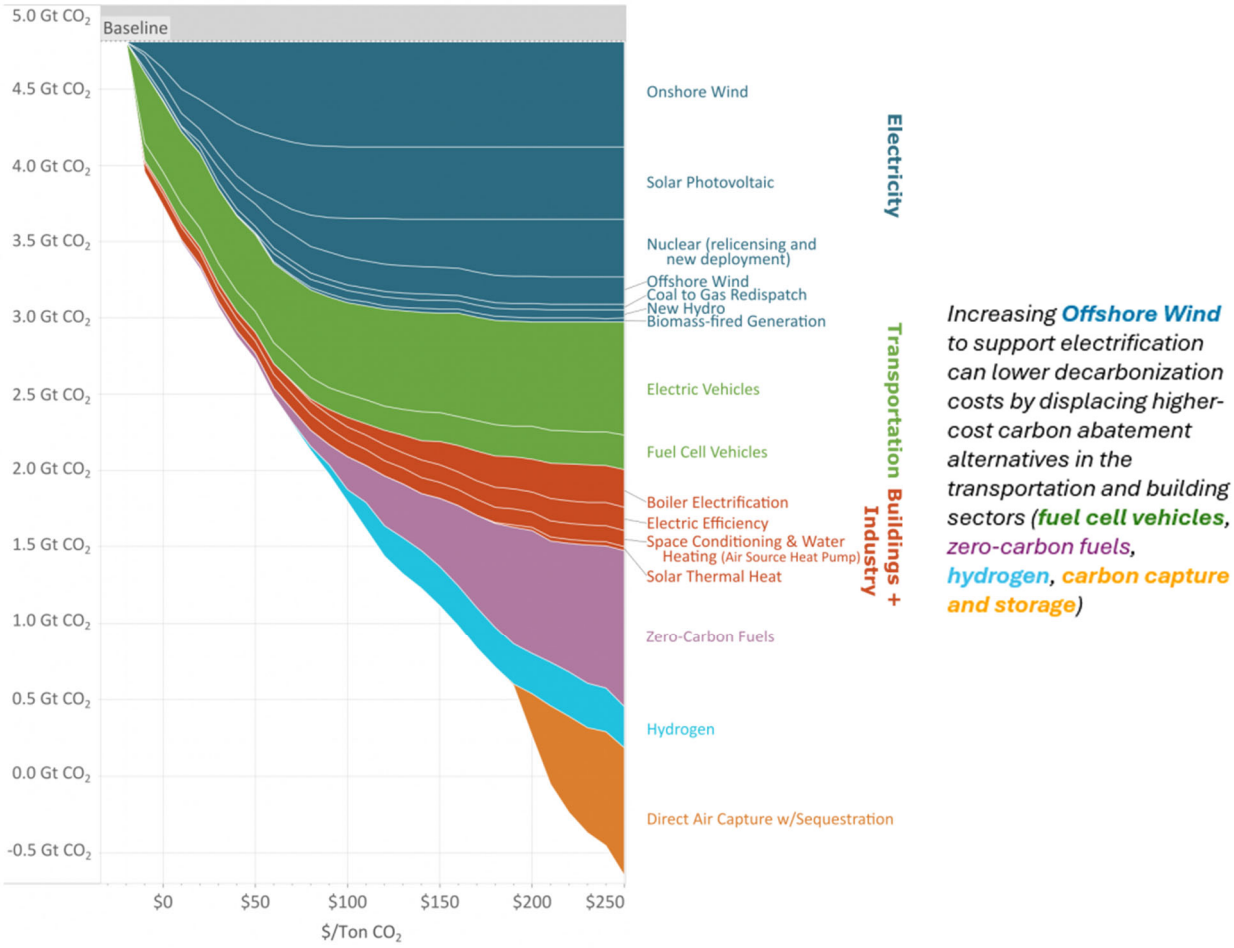
This report puts forward ideas for improvements for policy makers to consider as they plan for future competitive procurements. The report reflects recent experience with OSW solicitations and focuses on key elements that will affect the success of future procurements, including solicitation structures, products, and evaluation criteria; procurement administration and contracting; power purchase agreement (PPA) terms and conditions; and the transmission challenge. The report discusses each key element and offers recommendations for potential changes.

OSW is a vital and economic strategy for decarbonization of coastal state and regional economies.

Managing the cost of OSW development to electricity consumers is a central consideration in solicitation and procurement. But it is important to recognize that the practical context for OSW is achieving *economy-wide* decarbonization consistent with state legislative and policy mandates. It is difficult to overstate how important the growth of OSW is in this context. OSW is a cost-effective component of economy-wide decarbonization and less costly than alternatives to achieve GHG emission reductions in the transportation, building, and other sectors,

even if it is more expensive than other ways to generate electricity that emit GHGs or that are limited by space availability and/or permitting challenges. See Figure 1. That makes competitively procured OSW a cost-effective and vital component of economy-wide decarbonization for coastal states.

Figure 1: OSW to Decrease Economy-Wide Decarbonization Costs[1]



At the same time, offshore wind costs, which have been driven up by recent economic and market conditions, are not likely to ease significantly in the short term. It is reasonable to expect that the cost per MWh of OSW, like other technologies, will fall over time, but that will only occur if there is sufficient investment in OSW in the near term; technology cost reductions will come about through learning by doing. Only a steady source of U.S. demand will result in investment in a U.S. supply chain, which makes the continuation of state procurements, optimized for predictability, flexibility, and efficiency, the key to lower costs in the future.

[1] Farbes J. et al., "Marginal Abatement Cost Curves for U.S. Net-Zero Energy Systems," Environmental Defense Fund, August 2021, available at https://www.edf.org/sites/default/files/documents/MACC_2.0%20report_Evolved_EDF.pdf, at p.4.

This report provides recommendations for a blueprint to improve the design and administration of OSW procurements going forward to support continued growth in the pipeline of OSW projects and supply chain – one that is focused on achieving the states' goal of decarbonization in a timely fashion, with steady ongoing progress, and at the lowest achievable cost to energy consumers. Table 1, below, and the discussion that follows summarize the key observations and recommendations throughout the report.

Table 1: Summary of Key Solicitation and Procurement Factors

Category	Recommendations
Solicitation Process	• Establish transparent procurement schedules in advance • Maximize procurement quantities consistent with state mandates • Pursue multi-state procurements where feasible, and standardize PPAs, evaluation, and negotiation across states • Allow for flexibility in project milestones and Commercial Operation Dates (CODs) • Streamline and simplify solicitation response requirements
Procurement Method	• Increase revenue certainty and minimize OSW project exposure to variable and uncertain revenue streams through procurement of a combined Renewable Energy Credit (REC) and energy product, or appropriately designed indexed REC mechanism • Separately procure non-power attributes and development goals • Transition from Electric Distribution Company (EDC) to state-based procurement and ensure sufficient resources for state administration of solicitations and contracts
PPA Terms and Conditions	• Work with development community to draft contract language prior to solicitation, to ensure that key terms and conditions work for all parties before solidifying them in a public process • Lengthen maximum contract tenor to 30 years, standardized across states • Include and standardize price adjustment mechanisms to reduce project risks and financing costs • Maintain reasonable contract security requirements, consider incentives rather than penalties
Transmission	• Separate procurement of network components and upgrades from OSW procurement • Proactively adopt and accelerate regional planning and procurement processes • Proactively address outstanding regional cost allocation issues • Procure adequate transmission capacity before additional OSW projects come online

Solicitation Process: Transparent schedules, regional coordination, and flexibility in terms

The overall scale and pace of solicitations must match the states' commitments to achieve economy-wide decarbonization through electrification with simultaneous declines in the GHG emission intensity of the power sector. By setting procurement schedules and quantities flexibly and transparently, states can continue to make rapid progress towards this goal and meet interim targets for achieving declining emissions. With respect to OSW solicitation schedules, the following factors are key:

- *Transparent Procurement Schedules:* Advance identification of the quantities and schedules for future procurements supports the establishment and maintenance of production and support infrastructure by providing assurance and reducing risks to investors in these assets.
- *Flexibility in Project Size:* Flexibility in minimum and maximum quantities can improve the efficiency, maximize the value, and lower the unit cost of lease area utilization, allowing developers to optimize their project offerings.
- *Regional Coordination:* States should continue to build on the successful multi-state coordination in the recent solicitation cycle in New England and, where appropriate, move toward multi-state solicitations within and across regions as much as feasible. In so doing, it will be important to simplify and harmonize solicitation elements across states by working towards common contracts, joint negotiation, a single protocol for submission of bids, common contract tenors, a single set of bid requirements, and a single independent bid evaluator/evaluation process.
- *Flexibility in Project Delivery Dates:* Procurements should allow flexibility in project milestones and commercial operation dates, which will reduce project risks and financing costs and allow industry participants to singly and collectively manage industry conditions and broader economic conditions more efficiently, leading to lower bid prices and long-run consumer costs.
- *Fewer Non-Pricing Bid Requirements:* Solicitation response requirements should be streamlined and simplified, to the extent possible, and not require descriptions or demonstrations that are superfluous to project pricing or duplicative with obligations to other agencies (e.g., siting and permitting requirements).

Procurement Method: Reduce contract risk, administrative complexity, and non-power requirements

OSW procurement design should focus on (1) providing the revenue certainty needed to spur development of the OSW resource to help states cost-effectively achieve economy-wide decarbonization, (2) minimizing risks and the cost of financing and thus project bid prices, and (3) minimizing the costs, time to execute, and administrative burdens associated with the overall solicitation and procurement process. With respect to procurement design and administration, the following factors are key:

- *Product Design:* The products that will be contracted for (RECs, Offshore Wind RECs (ORECs), energy, capacity) and the form of pricing of those products (e.g., fixed or market indexed) directly affect the overall risk profile of projects and thus the cost of capital. Achieving greater revenue certainty and reducing exposure to uncertain variable pricing over the life of the contract will improve the risk profile and allow developers to attract a lower cost of capital. Escalating prices for energy and RECs is one way to achieve this objective, though properly designed indexed REC pricing may also work.
- *Contracting Parties:* States can reduce costs, administrative complexity, and time to develop solicitations, evaluate bids, and execute contracts by contracting directly with offshore wind developers, rather than

facilitating contracts between developers and EDCs. However, doing so requires that state entities carrying out the solicitations be fully staffed and funded with sufficient resources to capably administer the process and associated contracts.

- *Non-Power Requirements:* Achieving non-power attributes (e.g., staging/port buildout, workforce development) through the development of the OSW industry is an important and beneficial objective. Yet requiring products or weighting/scoring of attributes as part of the OSW procurement process introduces complications for bid development and evaluation and is an inefficient way to achieve these important economic policy goals. States and developers should review ways to achieve these benefits separate from solicitations for OSW and acquire them through separate bidding or procurement mechanisms.

PPA Terms and Conditions: Longer terms, reduced price risk, and incentives for performance

The balance of risks and obligations embedded in the terms and conditions of OSW PPAs affect almost everything – including project pricing, the assumption of risks, plans for equipment procurement and construction, financing, and security. It is important that states and the OSW industry work constructively and proactively to make sure that, to the extent feasible, there is clear alignment on the form and content of the PPAs before they are included in solicitations. Key factors related to PPAs include the following:

- *Longer Contract Tenors:* States should allow PPAs to include terms of up to 30 years. Maximum tenors should be consistent across states in any coordinated solicitation and more generally, if possible, across state procurements within a given region. Extending the maximum contract tenor allows bidders to determine the appropriate balance of financing costs versus contractual obligations based on their viewpoint of future market opportunities and turbine lifetime expectations. In an environment of competitive bids, this extension will lead to contracts that minimize the cost to consumers to achieve the states' GHG mandates and will minimize the electricity rate impact of OSW procurements in the early years of OSW development and the transition to a decarbonized economy.
- *Escalators and Indices:* PPAs should incorporate de-risking mechanisms such as escalators and indices tied to inflation and major equipment and commodity prices for relevant periods that begin with the bid submission date and carry to COD and beyond (depending on the index purpose). States and developers should work to further refine and standardize contract indexing mechanisms to ensure that they align with the materials, equipment, and labor categories used in OSW project development, supply contracting, and construction agreements. More generally, greater overall standardization of contract terms and conditions will reduce contracting costs.
- *Security Requirements:* The high costs of lease acquisition and development provide strong incentives to develop OSW projects quickly rather than delay, while step-ups in contract security provisions are not, by themselves, sufficient protection against cancelling contracts that have become unworkable. States should ensure security requirements are matched to their purpose, are not excessive, and minimize project risk profiles to reduce financing costs. Increasing security requirements is a natural reaction to project cancellations but they are not necessarily effective in preventing them in the future. Rather, they constrain project bidding flexibility, increase project exposure and financing costs, and ultimately lead to higher consumer costs without corresponding benefit.
- *Incentives, Not Penalties:* Rather than penalties for missing project milestones, PPAs could allow for milestone flexibility (as discussed earlier) and offer incentives to achieve milestones sooner than expected.

Transmission: Proactive planning and cost allocation, and buildout separate from OSW procurement

Most OSW solicitations have included project-specific transmission components and network interconnection study and upgrade obligations, which, to date, have involved interconnections that are relatively easily absorbed by existing capacity. This situation is about to change. As regions reach saturation with respect to their ability to absorb more OSW capacity, the interconnection and system/network upgrade costs will likely increase sharply for future projects. Further, continued balkanization of OSW transmission interconnection may lead to inefficient selection of competing projects relative to a coordinated planning approach, and will almost certainly lead to higher overall costs to consumers to meet states' GHG emission reduction goals. Fortunately, states and associated regional transmission system operators have anticipated this problem, and are taking steps to address it in a coordinated, proactive way. Key elements of transmission needs are as follows:

- *Coordinated Planning:* As is done in New Jersey, and has been initiated in New England, states must coordinate with their RTOs in structured, coordinated transmission planning processes to proactively plan for, study, and evaluate system/network transmission upgrades required for the interconnection of OSW. This process must begin now, given the time it will take to plan for, procure, develop, and construct the amount of network infrastructure needed.
- *Separate Procurement:* The procurement of power system network components and upgrades needed for the integration of OSW should be separate from OSW project procurements, with the needed transmission infrastructure coming from coordinated regional planning, analysis, and procurement.
- *Cost Allocation:* States need to coordinate and proactively address questions about allocating the costs of infrastructure needed solely or primarily for the integration of OSW over time, to the extent they are not already addressed in existing market rule or tariff language.

II. Introduction

A. The Role of OSW Solicitations and Procurements in State Decarbonization Plans

Many states have legislated requirements to achieve full economy-wide decarbonization by the middle of this century, in line with the Paris Agreement.[2] Achieving this level and pace of decarbonization will not be easy, requiring continued progress based on existing technologies, and the development and maturation of additional technologies over time. States are currently focused on a strategy of transformation of the transportation and building sectors coincident with decarbonization of the electric sector as it absorbs the growth in demand from building electrification and electric vehicles (EVs).

States in the Northeast and elsewhere have made significant progress in decarbonizing power supply through retirement of legacy fossil fuel generating capacity and the addition of large quantities of onshore wind and distributed and grid-connected solar. OSW is the next batter up. The contributions from onshore wind and solar are limited by available space and diurnal production patterns; nuclear and large hydro are limited by siting roadblocks and imports are limited by difficulties in expanding the transmission system as well as neighboring regions' own decarbonization goals. There is no reasonably priced resource other than OSW to fill the next large block of power sector decarbonization; without it, states' GHG emission reduction efforts will fail.[3]

Meeting climate mandates at reasonable cost will require that the coastal states in the Northeast and Mid-Atlantic procure large amounts of OSW in the coming decades, at a pace sufficient to achieve economy-wide decarbonization by mid-century, and to support achieving interim GHG emission reduction targets in the near- to mid-term.[4] Yet wholesale electricity markets in these regions do not incorporate a sufficient price on emissions of GHGs, and thus do not, on their own, provide adequate financial incentives for the development of OSW or other resources and strategies needed to decarbonize power supply.[5] In addition, the large upfront fixed costs and coordination challenges of setting up the infrastructure and supply chains necessary to build out the OSW industry

[2] Clean Energy States Alliance, "Table of 100% Clean Energy States," available at https://www.cesa.org/projects/100-clean-energy-collaborative/guide/table-of-100-clean-energy-states/.

[3] Whited, M, et al., "Charting the Wind: Quantifying the Ratepayer, Climate, and Public Health Benefits of Offshore Wind in New England," Synapse Energy Economics, Sierra Club, June 3, 2024, available at https://www.sierraclub.org/sites/default/files/2024-06/Synapse%20Offshore%20Wind%20Benefits%20in%20New%20England%2020240603.pdf, at p. 1; Muller, S, "Subject: Request for Information Regarding Maine Offshore Wind Renewable Energy and Economic Development Program," Union of Concerned Scientists, May 30, 2024, available at https://ucs-documents.s3.amazonaws.com/clean-energy/Offshore-Wind-Reliability-Analysis-Muller-UCS.pdf, at pp. 2–6.

[4] "Offshore Wind Energy Strategies," U.S. Department of Energy, January 2022, available at https://www.energy.gov/sites/default/files/2022-01/offshore-wind-energy-strategies-report-january-2022.pdf, at pp. i, 2.

[5] Cavicchi, J. and P. Hibbard, "Carbon Pricing for New England: Context, Key Factors, and Impacts," Analysis Group, June 2020, available at https://www.analysisgroup.com/globalassets/insights/publishing/2020-june-analysis-group-carbon-pricing-for-ne-main-report.pdf, at p. 13.

lead to substantial economies of scale and communal learning-by-doing benefits, implying that absent state and/or regional coordination and support, individual firms may not find it profitable to invest in the industry.[6]

Thus, state-mandated solicitations and procurement of OSW resources are both a prerequisite to OSW development and the critical path item for continued progress to decarbonized economies.[7] Fortunately, the pump is primed - the states and the OSW development industry have gained a great deal of experience and have made great strides through the initial set of solicitations administered over the past several years. Moreover, the lessons learned and the rapid adaptation of state procurements took place against a backdrop of challenging economic and industry development factors. This report reflects upon the experience to date and identifies best practices for carrying out future solicitations as states embark on the next wave of OSW growth.

B. Key Elements of OSW Procurements

The success of OSW as a tool to decarbonize economies will depend critically on the design and administration of OSW solicitations and procurements. While there is a wide range of factors that go into how solicitations are designed and administered, and how they affect the nature and pricing of submitted bids, this report focuses on the following four key categories of procurement processes:

Solicitation Quantities, Schedules, and Process: The ability of developers – individually and in aggregate – to manage the process and costs of going from concept to commercial operation depends critically on transparent timing and pacing of the OSW procurements, which will be occurring across multiple states for years to come (and, for that matter, countries). Factors such as the quantities procured, advanced notice of the timeframe of procurements, the potential for multi-state coordination and solicitation, solicitation timelines, and the role of required CODs and milestones will meaningfully affect solicitation outcomes. In particular, transparency, predictability, flexibility, and pace are key.

Solicitation and Procurement Methods: States have administered a range of different approaches to solicitation and procurement, across states and across time within states. Important factors include what products are sought (e.g., energy, RECs or ORECs, capacity, or combinations thereof); what entity administers and/or participates in the solicitation (a state or quasi-state agency, regulated electric utilities, municipal light companies and/or electric cooperatives, private interests); what information is required as part of the solicitation responses; and whether any non-project related products or attributes are included as part of the solicitation and/or in the evaluation of submitted proposals (e.g., economic development, transmission).

PPA Terms and Conditions: Developer pricing, assumption of risks, plans for equipment procurement and construction, financing, and security all form in direct response to the balance of risks and obligations embedded in

[6] Gillingham, K. and J. Sweeney, "Market Failure and the Structure of Externalities," *Harnessing Renewable Energy in Electric Power Systems: Theory, Practice, Policy*, September 8, 2010, 69–91, at pp. 76–79; "Offshore Wind Policy Options Paper," New York State Energy Research and Development Authority, January 29, 2018, available at https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Research/Biomass-Solar-Wind/Master-Plan/Offshore-Wind-Policy-Options-Paper.pdf, at pp. 5, 16, 20.

[7] Gillingham, K. and J. Sweeney, "Market Failure and the Structure of Externalities," *Harnessing Renewable Energy in Electric Power Systems: Theory, Practice, Policy*, September 8, 2010, 69–91, at pp. 79–81.

the terms and conditions of the power purchase agreements. Many factors in the PPAs can strongly influence developer bid formation and pricing, including (but not limited to) contract tenor, the inclusion of indexing or other de-risking and price adjustment mechanisms, contract security requirements, milestones and associated incentive/penalty structures, and the like.

Transmission: Finally, to-date, most OSW solicitations and bids have involved project-specific transmission components and system interconnection study and upgrade obligations. Yet as the first wave of solicitations is completed and projects interconnected, states and regions will quickly run into a far more challenging, complex, and costly environment for the efficient and reliable interconnection of OSW capacity resulting from the procurements. It is vitally important to proactively consider alternatives to addressing the needs of each state or region's transmission system in absorbing several GW (or more) of new OSW capacity and determine how to procure that capacity as part of – or separate from – OSW procurements.

C. Approach to and Organization of the Report

This report presents the results of a comprehensive review of the structure of OSW procurements, with a focus on the key features of procurement products: timing and solicitation frameworks, procurement administration, the most important terms and conditions included in OSW power purchase agreements, and the role of transmission in adding OSW resources. The goal is to identify those structural elements and contracting terms that will facilitate nimble and efficient procurement of the required quantities of OSW, in a way that protects consumers and reflects a fair balance of risks associated with project development, construction, and operations.

The analysis considers various perspectives in the literature on OSW solicitation forms and mechanisms, and states' widely varied experience in administering procurements over the past several years. This experience spans the initial and somewhat optimistic procurements to the more recent solicitations that reflect the growing pains of an industry in rapid growth, challenging supply chain circumstances, and the onset of general inflationary pressures.

There are a myriad of approaches to procurement, solicitation structures and administrators, PPA frameworks, and transmission infrastructure development that have been applied across states and time. We do not attempt to summarize all of them in this report. Instead, we draw upon this experience and the evolving viewpoints of the OSW policy and development communities to highlight the features that make OSW solicitation and procurement frameworks most successful. We translate this experience into recommended best practices for procurement structures going forward, with an eye towards how quickly the industry must respond to meet the challenge of climate change while achieving the right balance of risks among ratepayers and developers.

III. Best Practices for Procurements to Meet Decarbonization Mandates

Over the past several years the states have gained a great deal of experience in OSW solicitation and procurement and have continued to improve on the form and structure of solicitations based on lessons learned. Yet exogenous factors related to inflation, supply chain issues, and a mismatch between global supply and demand in OSW manufacturing and construction capabilities continue to challenge the industry and state procurements.[8] As the states embark on the next wave of solicitations, it is vital that we reflect on the experience to date, take a clear-eyed view of where the industry is and where it is heading, and design solicitation and procurement frameworks accordingly.

In this section we provide an evaluation of and recommendations for best-practice approaches, structures, and contract terms for OSW procurements. This review is based on evaluating experience to date, reflecting on the current status of the global OSW industry, and recognizing the urgent role that the development of OSW plays in states achieving economy-wide carbon abatement at the lowest possible cost. Ideal procurement strategies will focus on OSW as the target of procurements; facilitate development through clear roadmaps to procurement quantities and schedules; achieve efficient and focused administration of solicitations; contain PPA terms and conditions that are both transparent and flexible and clearly allocate risks in a way that fosters development activity and minimizes financing costs; and reflect efficient resolution of transmission system interconnection and upgrade needs through proactive planning and separate development.

The discussion is broken into the categories of (a) Solicitation and Procurement Quantities, Schedules, and Process; (b) Solicitation and Procurement Methods; (c) PPA Terms and Conditions; and (d) Transmission. Each section contains a discussion of the issue, a description of options and key factors, and, where appropriate, recommendations for how to address it in future solicitations and procurements.

A. Solicitation and Procurement Quantities, Schedules, and Process

To maintain continuous progress in the decarbonization of the electric sector, states are expected to continue pursuing substantial additions of OSW to regional power plant portfolios. OSW additions will be occurring across multiple states and regions, against a backdrop of strong global demand. The scale, pace, and timing of resource additions, however, has a direct impact on development activities, supply chain logistics, and the availability and pricing of OSW component parts and construction resources. These factors can influence the costs ultimately borne by ratepayers for OSW capacity.

[8] In October 2023, Massachusetts lost three-quarters of the offshore wind capacity that was previously in its pipeline. Commonwealth Wind and SouthCoast Wind terminated their agreements, stating that changing economic conditions made the contracts they struck earlier with utilities no longer viable. *See* Lisinski C., "Cancellation of 2nd big Mass. wind energy contract approved," NBC Boston, October 3, 2023, available at https://www.nbcboston.com/news/local/cancellation-of-2nd-big-mass-wind-energy-contract-approved/3150766/.

Procurement Quantities, Schedules, and Process

The overall scale and pace of solicitations must match the states' commitments to achieve economy-wide decarbonization through electrification and continuous declines in the GHG emission intensity of the power sector. By setting procurement schedules and quantities aggressively, states can continue to make rapid progress towards this ultimate goal and meet interim targets for achieving declining emissions. Further, the more explicit states can be about the quantities and schedules for future procurements, the more certainty the OSW industry will have to establish and maintain production and support infrastructure.

It is important in this context to consider the minimum and maximum quantities included in each solicitation. States have included various specific minimum and maximum MW or MWh quantities for procurement,[9] often tied to legislated or regulated procurement targets. In some cases, states have been explicit about not only the instant procurement, but the expected schedule for additional procurements in future years.[10] Such identification of the schedule and quantities for procurement provides transparency around state procurement plans, a degree of certainty about forward-looking market opportunities, and an idea of the magnitude and timing of market activity available to sustain support activities (e.g., transport, staging).

Setting procurement targets too low and/or too slow may delay the addition of sufficient capacity to meet state targets and increase certain fixed costs per megawatt (MW) of capacity added. Infrequent or small-quantity solicitations can forego economy of scale benefits with respect to staging, delivery, and construction. On the other hand, smaller and more frequent solicitations can be something of a hedge against inflationary pressures or episodic economic conditions affecting development financing and bid prices. Setting procurement targets too high and/or too fast can, in theory, introduce supply chain and supply/demand balance issues and could lead to the appearance of a lack of competition (e.g., if bids do not fill maximum procurement targets). Thus, it is important to weigh the universe of development opportunities as well as infrastructure and supply chain logistics when setting procurement targets.

It is worth paying attention to the potential impacts associated with the specificity of solicitation minimum and maximum quantities. The varying sizes of lease areas and the evolution of available turbine technology and size over time means the available MW production from developers' lease areas will vary, and rarely will the maximum production potential of a lease area align perfectly with the specific quantity included in a given solicitation.[11] If developers are not able to bid up to the available capacity of their lease areas, it can result in residual lease area capacity that is smaller than the minimum quantity in future procurements, preventing developers from fully using

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[9] In Massachusetts, *An Act Driving Clean Energy and Offshore Wind* requires that individual solicitations for offshore wind must seek proposals for *at least* 400 MW. Whereas in Connecticut, the Department of Energy and Environmental Protection was authorized to procure *up to* 825,000 MWh of offshore wind generation. *See* Belval, P, et al., "Massachusetts Enacts Important Energy Legislation – An Act Driving Clean Energy and Offshore Wind," Day Pitney LLP, August 18, 2022, available at https://www.daypitney.com/insights/publications/2022/08/18-ma-energy-legislation-clean-energy-offshore-wind/; Beiter, P, et al., "Comparing Offshore Wind Energy Procurement and Project Revenue Sources Across U.S. States", National Renewable Energy Laboratory, June 2020, available at https://www.nrel.gov/docs/fy20osti/76079.pdf.

[10] New Jersey announced a schedule of future OSW solicitations to occur through 2030 and recently accelerated their timeline. *See* "New Jersey's Offshore Wind Program," New Jersey Board of Public Utilities, available at https://bpuoffshorewind.nj.gov/.

[11] Hernando, D. M, et al., "Capacity Density Considerations for Offshore Wind Plants in the United States," National Renewable Energy Laboratory, December 2023, available at https://www.nrel.gov/docs/fy24osti/86933.pdf, at pp. v–vi.

their lease area and resulting in higher unit costs in bid responses. States may wish to evaluate this possibility within each solicitation cycle and consider – where legislated procurement details and quantities allow – two options: allowing bidders to offer up to the available capacity of lease areas, and/or removing or lowering minimum bid quantities to capture any residual lease area capacity available.

With respect to schedules and quantities, states should consider the following:

- Achieving coastal states' GHG emission reduction mandates and policies at the lowest total cost to the economy requires, in part, electrification of the transportation and building sectors backed by aggressive near-term and longer-term development of OSW resources. Subject to the considerations that follow, states should set schedules for procurements that result in the greatest amount of OSW development as soon as possible.
- Transparency around the schedule for OSW procurements years in advance can help the OSW development community prepare for the development of solicitation responses, arrange for construction activities, and potentially mitigate supply chain issues. States should publicly announce forward-looking schedules for forthcoming solicitations up to the full desired procurement quantity.
- Incorporating a degree of flexibility around the procurement quantities to allow developers to maximize the installed capacity in their lease areas can improve overall development economics and lower the long-run cost to consumers.

CODs and Milestones

Typically, OSW solicitations include milestone and COD expectations, and have established expectations in the bids and the ultimate PPAs between the purchasing entity and the developer, with financial penalties for non-compliance.[12] Doing so provides some assurance to the states that proposals represent legitimate offers, that projects will come online as expected, and ensures that states will not need to search for alternative energy sources for those time periods sufficient to meet decarbonization targets. States have been responsive to-date in understanding the increased challenges in delivering offshore projects as compared to onshore wind and solar. Yet a broader level of flexibility is warranted, since the scale and difficulty of executing OSW projects mean that they are fundamentally more exposed to schedule risks outside of the developer's control, both with development tasks (federal permitting, backlogged interconnection queues), and equipment supply.

Particularly when procuring large quantities of OSW, mandating set milestones and CODs, and imposing significant penalties for not achieving them have two key effects. First, in an environment of very large amounts of OSW being procured by multiple states (and countries) over a relatively short period of time, stringent timing

[12] For example, in the draft PPA associated with its 2021 solicitation, Massachusetts required developers to set Critical Milestones. If Critical Milestones (including the guaranteed COD) were not met, a developer could delay the Critical Milestones by up to four six-month periods by posting additional security of $5,000 per MWh per hour of the contract's maximum amount (in MWh) for each six-month period. If the developer failed to operate by the COD, the developer was required to pay delay damages of $100 per MWh per hour of the contract's maximum amount until the COD was achieved, the contract was canceled, or one year had passed. *See* "Appendix B-1 National Grid Version PPA," Massachusetts Clean Energy, available at https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fmacleanenergy.com%2Fwp-content%2Fuploads%2F2021%2F05%2Fnational-grid-83c-iii-ppa-5_5_21.docx&wdOrigin=BROWSELINK, at pp. 15–17.

requirements can increase competition for limited infrastructure and other resources, create supply chain bottlenecks with little to no flexibility on the part of the developer to adjust schedules and manage the procurement and receipt of key manufactured components, and/or potentially limit the pool of competitors and projects. The existing COD targets in PPAs are ambitious, and with the current federal permitting timeline it is difficult for projects to plan for a COD in the early portion of the COD window. This complication pushes the base case COD into the latter half of the COD window, which leaves little room to account for additional unexpected development, supply chain, or construction delays.

Second, procuring all of the required materials and services on a fixed COD timeline increases costs to developers by reducing their flexibility to manage supply and infrastructure timing in light of industry circumstances. For example, for inputs that are supplied by only a handful of companies, the constraints on equipment manufacturing and procurement and scheduling of supporting infrastructure and labor will almost certainly increase supply costs as developers must compete with other customers for needed supplies and access to infrastructure. This competition, combined with the risks associated with contracts that have substantial milestone penalties/fees, increases equipment and financing costs, resulting bids, and total costs to consumers. Recent experience has demonstrated how inflexible COD timelines, combined with a supply-demand imbalance for necessary inputs, can lead to unsustainable cost increases to developers. Providing flexibility in COD milestones gives developers greater bargaining power to negotiate costs with suppliers, reducing costs to consumers and increasing the likelihood of project success.[13]

Finally, as the industry moves beyond transmission system topologies that allow for project-integrated points of interconnection, to an environment where transmission investments need to be separated from OSW developments and planned proactively, the risk and cost implications of a lack of flexibility in project milestones and CODs will multiply. In this context, milestone/COD flexibility and alignment with transmission project development will be a necessary precursor to continued growth in the industry.

Allowing for flexibility does not imply removing milestones and COD targets entirely. Clearly, there need to be milestones and CODs included in bids, and the structures to-date have tried to address this with some flexibility. However, these conditions warrant a close review of how stringent such milestones and CODs are, whether a system of incentives rather than penalties may work better, and what the alternatives may be to allow greater flexibility while protecting consumers. An environment of OSW development where all developers have greater flexibility around procurement, construction, and operation dates will build a necessary degree of adaptability and cost management into the development process, lowering bid prices (relative to a more stringent milestone regime). Moreover, a regime of greater COD flexibility will not meaningfully delay the achievement of state

[13] For example, Empire Wind I was initially required by CAISO to have a COD 4 years after the grid operator issued its "facilities study" of the plan, which, in this case, happened on June 14, 2021. The developer was unable to meet that deadline due to "expected timelines for receiving action on key permits and governmental approvals, coupled with the inherent complexities of constructing and commissioning New York State's first large-scale offshore wind generating facility." After being granted an extension, the project is on track to begin construction this year (2024). *See* Voorhis S., "Empire Wind pushes opening of New York's first offshore wind farm to 2026," Utility Dive, October 16, 2021, available at https://www.utilitydive.com/news/empire-wind-pushes-opening-of-new-yorks-first-offshore-wind-farm-to-2026/608282/; "Equinor's Empire Wind 1 offshore wind project gets New York construction approval," Reuters, May 16, 2024, available at https://www.reuters.com/business/energy/equinors-empire-wind-1-offshore-project-gets-new-york-construction-approval-2024-05-16/.

decarbonization or OSW procurement targets and may instead facilitate more rapid growth by avoiding project cancellations in the face of temporal changes in industry conditions and underlying cost drivers.

In setting milestones, states should create a flexible framework that allows industry participants to, in effect, "collectively" manage industry conditions and broader economic conditions, to the benefit of bid prices and long-run consumer costs. In particular, states should consider:

- Pacing schedules of procurements and expected system OSW additions to achieve state interim and final targets/mandates, with an understanding that the ultimate growth will match expectations "plus or minus" a few years. In effect, this structure may mean that depending on prevailing economic and industry supply conditions, in some years there will be large quantities added to the system, and in other years relatively less.
- Allowing developers to propose their own target milestones and CODs within set ranges of time rather than requiring firm CODs in the bids.
- Promoting timely construction and commercial operation through a system of incentives when milestones are met, rather than imposing penalties when they are missed.
- Allowing CODs and milestones to be set after permits are acquired, eliminating the negative impacts on bid pricing associated with the somewhat unknown and unknowable risks associated with facility siting and permitting delays.

Solicitation Process and Content

Solicitation documents must explicitly require sufficiently detailed descriptions, data, and demonstrations for the evaluator to be able to review competing bid pricing and risk profiles on a comparable basis to ensure the bid and the developer are legitimate and likely to lead to actual operational outcomes, to ensure that the developer has the financial wherewithal to meet all bid obligations and commitments, to clearly present the expected terms and conditions of resulting PPAs to aid in the development and pricing of bids, and to establish the obligations of developers to meet all other requirements needed to site, permit, and develop the project.

With this need for comprehensiveness in mind, it is also important to create solicitation documentation and requirements that are sufficient to efficiently manage the procurement process and decision without being overly burdensome or complex, and without requiring extraneous or unnecessary bid response obligations and information. Solicitation documents with complex bid requirements or requests for extraneous information do not increase the likelihood that projects will be responsibly developed, but they do slow down the evaluation process, can ultimately compromise proposal quality and completeness, stifle innovation, lead to extension requests, and prompt the need for amendments and clarifications. Examples of potentially unnecessary bid requirements include (a) requiring extensive wind resource analyses for a specific turbine, even though the developer may have discretion to change the turbine model after award; (b) the need to include extensive information on how the bidder will comply with environmental and other permitting requirements, when the bidder has a fundamental obligation to comply with all state and federal requirements and the review process sits with a specific agency; (c) required descriptions of how bidders will negotiate with relevant labor, when the developer must in any event develop and sign a project labor agreement (PLA); and (d) comprehensive information on wind profiles and production capabilities, when capacity and energy requirements and delivery obligations are explicit in the PPA.

States are well-suited to understand the various siting and permitting obligations of bidders and the developer's technology and production obligations, as encoded in the agreements they ultimately sign with the counterparty. To the extent that data, information, and descriptions are not absolutely needed for the bid evaluator to fairly compare bids and select successful offers for negotiation, it should not be included as a requirement in responses to solicitations. Avoiding such duplicative or unnecessary information can simplify and streamline the bid development and project evaluation processes. Solicitation documents should ask for information needed to evaluate the proposals but should assume that developers will comply with all conditions of permits and interconnection obligations. Projects should not be required to submit extensive documentation on their plans to comply with prevailing laws and regulations.

Multi-state Coordination

Nearly every coastal state from Maine to North Carolina is considering or has established mandates or targets for the procurement of OSW over the next two decades. If all mandates and targets are achieved across this coastal span, well over 30 gigawatts (GW) of OSW will be acquired through state- and/or utility-administered OSW solicitations.[14] This possibility raises not only major questions about how to interconnect this much OSW to the three Northeast and Mid-Atlantic power grids (discussed in the transmission section below), it also elevates the importance of states coordinating around the solicitation and COD timeframes of separate state procurements as well as exploring how multi-state/regional procurements may improve the overall pace and efficiency – and lower the cost – of OSW additions.

In the most recent round, Connecticut, Massachusetts, and Rhode Island administered a multi-state solicitation alongside state-specific procurements to amplify OSW's benefits, increase procurement efficiency, and lower costs.[15] Additionally, the regions' RTOs have moved forward with processes and analyses around interconnection that could support state efforts to identify and manage transmission network integration needs.

There are a range of inefficiencies and logistical challenges that stem from the balkanized procurement of OSW across states within and across regions – or stated differently, there are a range of potential administrative, logistical, and cost benefits associated with increasing coordination across states. These challenges include at least:

- Uncoordinated timing of solicitation filing dates, CODs, and/or other key milestones can create inefficiencies in project selection and competition for the OSW development resources needed to complete projects as offered;
- Overlapping COD requirements across states create an artificial constraint on commissioning projects given the limited number of vessels and equipment suppliers;

[14] Musal, W, et al., "Offshore Wind Market Report: 2023 Edition," U.S. Department of Energy, August 24, 2023, available at https://www.energy.gov/sites/default/files/2023-09/doe-offshore-wind-market-report-2023-edition.pdf, at p. 41.
[15] "Massachusetts, Rhode Island, and Connecticut Sign First-Time Agreement for Multi-State Offshore Wind Procurement," Commonwealth of Massachusetts, October 4, 2023, available at https://www.mass.gov/news/massachusetts-rhode-island-and-connecticut-sign-first-time-agreement-for-multi-state-offshore-wind-procurement.

- State competition for qualitative project benefits can lead to inefficient allocation or duplication of infrastructure and supply chain development efforts, increasing the total costs of the projects offered and selected in various state solicitations;
- Similarly, state-imposed limitations on sourcing OSW logistics and materials can result in an over-build of logistics and manufacturing facilities that in-turn will have insufficient demand to keep them viable;
- Different contract tenors, terms and conditions between state solicitations can result in an opaque divergence in the balance of development risks and costs that can lead to different offer pricing across bids in different states for essentially the same product, without a transparent explanation;
- Lack of coordination in developing transmission plans for integrating OSW projects can lead to decreased reliability and increased costs; and
- Multiple states within a region with simultaneous OSW solicitations can increase costs to developers in developing their bids given the need to evaluate multiple and varying solicitation processes, documents, and contracts, consider the relative economics in each state, determine which solicitation process(es) to participate in, and in what quantities. This complexity for the developer is exacerbated by the fact that the range of unconsolidated procurement sizes can lead to specific differences in the financial value of bidding into one state versus another.

The recent coordination across Connecticut, Massachusetts, and Rhode Island was an exceptional leap forward in the procurement of OSW by the New England states. A high degree of coordination among state officials and productive proactive interaction with the OSW development community leading into the procurement produced a robust integrated solicitation effort, with many of the potential impediments to regional coordination addressed.[16] While it may be improved in several ways (discussed below), it provides a strong model for regional coordination around OSW procurements that could serve as an example for other states in multi-state regions (i.e., PJM), and/or for coordination among states crossing power regions.

Moving forward, there are several lessons learned that flow from the administration of the regionally-coordinated procurement in New England; lessons that should be considered in the context of future coordinated procurements. Specifically:

- Regional collaboration should be pursued in ways that do not inadvertently create additional administrative barriers that flow from a coordinated multi-state process.
- States should work towards ensuring the solicitation and bid review processes involve a single protocol for submission of bids, a single set of bid requirements, and a single independent bid evaluator/evaluation process. Similarly, the tenors and terms and conditions in PPAs across states should be harmonized and coordinated negotiation processes should be established. These steps will reduce transactions costs, increase efficiency, and facilitate the review of bids on an even footing.
- Regional procurements should provide, as explicitly as possible, the share or MW quantity expected to be procured by each state, particularly if there are PPA tenors, terms, or conditions that materially differ

[16] "Massachusetts, Rhode Island, and Connecticut Sign First-Time Agreement for Multi-State Offshore Wind Procurement," Commonwealth of Massachusetts, October 4, 2023, available at https://www.mass.gov/news/massachusetts-rhode-island-and-connecticut-sign-first-time-agreement-for-multi-state-offshore-wind-procurement..

across states (creating disparate risk profiles by state). Listing quantities by state in advance can help reduce bid prices by reducing the uncertainty associated with an unexpected distribution of awarded project capacity across the states in question. An alternative would be to allow the developer to include severable or changeable positions dependent upon the outcome of the states' allocation of awarded capacity.

- Eliminate competition among states for non-project attributes, such as economic benefits attributable to in-state supply chain support infrastructure (e.g., ports, staging areas, other). As discussed below, this competition can be avoided through separating the procurement of non-project attributes from project output, and/or identifying and soliciting non-project attributes on a regional basis.
- Encourage proactive regional development of the most efficient points of interconnection (POI) and associated transmission system upgrade requirements (discussed in more detail below).

B. Solicitation and Procurement Methods

Over the past several years, states have administered a wide range of approaches to solicitation and procurement, and have modified their approaches over time.[17] Important factors include what products are sought (e.g., energy, RECs or ORECs, capacity, or combinations thereof); what entity administers and/or participates in the solicitation (a state or quasi-state agency, regulated electric utilities, municipal light companies and/or electric cooperatives, private interests); whether any non-project related products or attributes are included as part of the solicitation and/or in the evaluation of submitted proposals (e.g., economic development, transmission); and what information is required as part of the solicitation responses.

Products and Entities

The key objectives in designing OSW procurement products and the administrative process are to (1) provide the revenue certainty needed to spur development of the OSW resource to help states cost-effectively achieve economy-wide decarbonization, (2) minimize the cost of financing and thus project bid prices, and (3) minimize the cost of, time to execute, and administrative burdens associated with the overall solicitation and procurement process. Revenue certainty and reduced financing and administrative costs, in turn, benefit ratepayers by lowering project costs and shielding them from the risk of market price increases. The various procurement mechanisms administered by states are all designed to accomplish these objectives, through long-term (twenty to thirty year) PPAs for the sale of OSW products – RECs, ORECs, and/or energy – to either state entities or load-serving entities (i.e., local electric distribution utilities).

The selection of products procured and the entity responsible for administering the procurement and purchasing the products affects the efficiency and cost of the procurement, financing costs, bid prices, and the ultimate cost to consumers. In these respects, there are several key considerations, including:

[17] States like New York and Connecticut have started introducing terms in solicitations that acknowledge the financial challenges throughout the long-term development of projects. *See* DiGangi, D, "Earlier derisking is key to offshore wind's future in the US, Ørsted Americas CEO, others say", Utility Dive, April 18, 2024, available at https://www.utilitydive.com/news/derisking-offshore-wind-project-finance-orsted-eversource-dominion-nyserda/713619/.

- Structures that do not require the OSW developer to rely on a future stream of revenues in wholesale markets provide the strongest level of revenue certainty, lowest risk, and ultimately lead to the lowest possible bid prices. Exposure to market prices increases the inherent risk in the project, increasing project bid prices.
- Combining energy with RECs in solicitation products can help to lower project revenue risk, financing costs, and bid prices by providing a certain stream of payments for the majority of the project's value. On the other hand, this combination may require involvement of the state's EDCs in solicitation and/or procurement, which has several drawbacks. EDC involvement typically adds costs through the inclusion of EDC remuneration and through an increase in project development risk (by adding a layer of regulatory approval).[18] It also adds delay and cost to the procurement process by requiring multiple contentious adjudicatory regulatory proceedings and prescribed solicitation procedures, and/or third-party independent evaluators.
- An alternative approach involves state-based procurement of indexed RECs whereby the REC price increases or decreases relative to the REC strike price based on whether market revenues are lower or higher than expected. This mechanism provides a hedge to OSW developers against market volatility and a requisite level of certainty around project revenues over time, reducing risks and financing costs. However, in designing the hedge mechanism, it is important to assess whether the mechanism fully hedges the price risks of the project and if not, the incentives created by imperfect hedges. For example, New York's indexed OREC price adjusts payments based on the simple average price for the load zone to which the project's energy is delivered,[19] opening the OSW owner to basis risk if the locational marginal price at the project's node differs from the zonal price, as well as temporal risk due to the negative correlation between generation and prices. By signaling where and when energy is more valuable, predictable deviations from the index price may induce a more economically efficient outcome by creating incentives to locate projects in areas that receive more favorable prices or have more favorable production profiles; however, the unpredictable deviations expose developers to a risk they cannot easily hedge, which increases bid prices. The more closely the indexing mechanism matches actual energy revenues, the greater the revenue certainty and the lower the bid prices.[20]
- By directly procuring a REC product from OSW developers, states can reduce remuneration, administrative costs, and regulatory steps required to award a bid relative to facilitating procurement of

[18] In Massachusetts, EDCs are paid 2.25% of the annual contract payments to compensate the company for accepting the financial obligation of the long-term contract. *See* "An Act Driving Clean Energy and Offshore Wind," The General Court of the Commonwealth of Massachusetts, August 11, 2022, at Section 61(e)(1), available at https://malegislature.gov/Laws/SessionLaws/Acts/2022/Chapter179.

[19] "Standard Form Offshore Wind Renewable Energy Certificate Purchase and Sale Agreement," NYSERDA Partner Portal, January 12, 2024, available at https://portal.nyserda.ny.gov/CORE_Solicitation_Document_Page?documentId=a0l8z000000xuMI&_gl=1*s75jx3*_gcl_au*MjU5ODA1ODQ2LjE3MTk1NTQ4MjQ.*_ga*MTIxMDU1MzQzNC4xNzA4NzE4MTYx*_ga_DRYJB34TXH*MTcxOTU1NDgyMy4xNy4xLjE3MTk1NTQ4OTYuNjAuMC4w, at pp. 3, 18–19.

[20] A recent review of New York's program provides examples of adjustments in indexing mechanisms that could be used to address unexpected outcomes from established indexing mechanisms, including, e.g., a one-time adjustment if there was a one-off event that affected all contracts; and allowing strike prices to escalate over the life of the contract, e.g. at inflation, to address the impact of inflation on O&M costs. *See* "Draft Clean Energy Standard Biennial Review", New York State Department of Public Service and NYSERDA, July 1, 2024, available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BA0019490-0000-C313-A126-877CFFAA2B0C%7D, at pp. 68-69.

combined energy and REC products on behalf of an EDC. However, it is not possible for the state to take on these responsibilities without appropriate legislative authority and a guarantee of sufficient revenues and resources to execute the solicitation and procurement. In particular, executing solicitations and procurements includes, at a minimum, developing appropriate solicitation forms, PPAs, and processes; effectively and efficiently administering the solicitations; carrying out negotiations and completing the procurements; and overseeing and executing the state's obligations under the PPAs. EDC expertise in contracting and their understanding of their individual needs should be leveraged by the state to efficiently achieve the above approach.

- In most cases, the inclusion or exclusion of capacity from the set of products procured will not have a meaningful impact on project bid prices. When capacity is not procured as part of a solicitation, developers are free to pursue capacity market revenues, provided this does not interfere in any way with meeting contract obligations. However, wholesale capacity markets are fraught with uncertainty related to capacity market design and prices and the actual capacity value of the OSW resource over time. Efforts to assign OSW (and other resources) a "capacity accreditation factor" (CAF) are expected to result in relatively low and declining capacity market value for OSW resources over time.[21] As a result, developers will generally discount to zero (or near zero) the potential for capacity market revenues and will price their bids for energy and/or RECs to cover all costs over the contract horizon.

At this time, in many states, contracting over the long term for the combination of RECs and energy remains the preferred option, meaning the one with the highest certainty and lowest risk around revenue recovery.[22] Alternatively, REC-only purchases can approach the same level of risk minimization through well-designed indexing mechanisms that appropriately reflect or capture the relevant nodal pricing location and timing. Finally, given the potential mismatch between state procurement targets in any given solicitation and project size/generating capability, leaving open the ability to also pursue sales beyond the EDC ratepayer base – for example through agreements with municipal light companies, electric cooperatives, and/or private/corporate entities – can provide a beneficial layer of flexibility and optionality that may benefit the OSW resource's risk profile and help lower the cost of financing.

Non-Production Attributes

Solicitations frequently require and/or place value on a range of items that are ancillary to the production of energy from OSW projects, such as in-state staging/port buildout and workforce development.[23] These ancillary state benefits are an explicit recognition of the additional value OSW development brings to states, and they are an important component of the overall rationale for states pursuing offshore wind – not only to help achieve state

[21] "Evaluation of ELCC Methodology in the ISO-NE Footprint," ISO New England, October 10, 2022, available at https://www.iso-ne.com/static-assets/documents/2022/10/a09b_mc_2022_10_12-13_rca_nrdc_report.pdf, at p. 56.
[22] Beiter, P, et al., "Comparing Offshore Wind Energy Procurement and Project Revenue Sources Across U.S. States," National Renewable Energy Laboratory, June 2020, available at https://www.nrel.gov/docs/fy20osti/76079.pdf, at p. v.
[23] As an example, New York's third OSW solicitation in 2022 required Supply Chain Investment Plans and New York Workforce and Jobs Plans from bidders. *See* "Offshore Wind," New York State Energy Research and Development Authority, available at https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation, at pp. 30, 44..

GHG emission reduction mandates and provide clean electricity, but also to support local economic development and ensure that the local workforce benefits from the growth of a new industry.

It is not necessary to include such ancillary features as part of the OSW solicitation process in order to achieve most, if not all, of states' economic development and workforce goals, as project developers will necessarily need to train local workers and their construction and operational activities will by nature enhance the local economy. Yet doing so creates perverse incentives, raises the price of OSW bids, and introduces unnecessary complication and confusion into OSW procurements. Some of the issues associated with embedding non-project attributes into the OSW solicitation process include:

- It distracts from the goal of fair competition based on solicitation for comparable products.
- It reduces the transparency of the solicitation process and introduces unquantifiable differences among bids.
- It results in subjective judgments on the part of evaluators and policymakers that can differ across states and across solicitation cycles because of the need to apply weights to the various qualitative and quantitative factors in the solicitation and evaluation process.
- It forces the selection from among competing projects of "bundled" products that are not necessarily comparable. The project developer with the most efficient OSW project may not have the most competitive qualitative offer, potentially leading to inefficient project selection and higher overall ratepayer costs in the long run.
- It can provide perverse incentives to maximize the non-product benefits in project proposals without any explicit consideration of the cost-benefit tradeoffs being made from the perspectives of ratepayers and society.
- It can create incentives for an inefficient "arms race" of competition among states within a region (e.g., which state captures the most economic activity associated with port development, and the most jobs); with no consideration of what is the most efficient and highest-value mix of OSW development activity on a regional basis. These circumstances can lead to inefficient duplication – for example, given the variable pace of OSW project construction stemming from a single state or developer, the development of port and staging capacity across multiple states may be a less efficient and more costly outcome (by leading to idle support capacity) than fewer such developments capable of supporting most or all OSW construction activity in the region.
- It encourages monopolistic development and use of these resources – e.g., one developer controlling port capacity or factory slots for ten years.
- It forces the obligation to build the "public policy rationale" for OSW onto project developers, who are better suited to focus on development of the most efficient and lowest-cost OSW projects.

There are a number of different options to more efficiently promote the industry's non-energy benefits and organize the procurement of those benefits.[24].

[24] Panny, J, et al., "The growing role of non-price criteria in offshore wind auctions," Euractiv, December 8, 2023, available at https://www.euractiv.com/section/energy-environment/opinion/the-growing-role-of-non-price-criteria-in-offshore-wind-auctions/.

One option would be to separate ancillary requirements (like the establishment of port development to support staging, transport, and construction) into separate products and obtain or achieve them through separate procurement processes open to a wider range of potential providers (that is, beyond those entities whose primary role and capability is the development of offshore wind products). If appropriate, states could rationalize desired economic, social, and environmental benefits by conducting cost-benefit analyses in advance to define the expected scope of activities/projects, and then let a wider range of entities (rather than just OSW developers) compete to provide them. These efforts could be supported in part through state acquisition of federal funding vehicles to amplify the magnitude of projects, lower their costs, and/or increase the benefits delivered.

If despite the drawbacks, states wish to continue to include the provision and valuation of non-production benefits as part of OSW solicitations, there may be a number of ways the states could improve upon the vehicle for doing so and achieve outcomes that minimize the associated costs and/or maximize the benefits obtained. First, states should collaborate with neighboring states to avoid inefficient duplication that may come with each state seeking maximum state-specific economic benefits from bids in each procurement cycle.[25] Second, instead of leaving the opportunities wide open in solicitations, states could define the investments sought in advance as an explicit solicitation product and allow bidders to compete to provide the service through bids specifying price and delivery method, which allows evaluators to specifically score these offers quantitatively.[26]

Third, states could de-couple competitive procurements for OSW projects and OSW supply chain resources and allow awarded OSW projects an opportunity to adjust their PPA prices in the future if they commit to purchase output from supply chain resources which receive funding.

C. PPA Terms and Conditions

The balance of risks and obligations embedded in the terms and conditions of OSW PPAs affect almost everything – including project pricing, the expectation and assumption of risks, plans for equipment procurement and construction, financing, and security. PPAs are complex vehicles that incorporate binding obligations stretching out decades, and the terms of the draft PPA contained in solicitation documents ultimately drive the form and pricing of solicitation responses. Thus, it is vital that states constructively and proactively work with the collective OSW industry in the state and region to make sure that there is clear alignment on the form and content of the PPAs before they are included in solicitations. In recent years, states actively sought industry input as the underlying economic and supply conditions in the industry changed rapidly, and the form, pricing/indexing mechanisms, and terms and conditions of the PPAs improved significantly as a result. In this section we expand on challenges with and potential improvements to the content and terms of PPAs, with a focus on three of the

[25] For example, several East Coast states and federal agencies came to an agreement to expand additional elements of the OSW supply chain, such as manufacturing facilities, port capabilities, and workforce development. *See* "Memorandum of Understanding By and Among The United States Department of Energy, The United States Department of the Interior, The United States Department of Commerce, and The United States Department of Transportation and the States of Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, and Rhode Island," The White House, September 20, 2023, available at https://www.whitehouse.gov/wp-content/uploads/2023/09/Federal-State-MOU-on-East-Coast-Offshore-Wind-Supply-Chain-Collaboration.pdf, at p. 1.

[26] Panny, J, et al., "The growing role of non-price criteria in offshore wind auctions," Euractiv, December 8, 2023, available at https://www.euractiv.com/section/energy-environment/opinion/the-growing-role-of-non-price-criteria-in-offshore-wind-auctions/.

more important elements – contract tenor, the inclusion of indexing or other de-risking/adjustment mechanisms, and contract security requirements.

Contract Tenor

For the most part, the tenor of OSW contracts to date has been limited to twenty-five years or less.[27] This was a sensible limitation designed to protect consumers at a time when the industry and technology was in its very early stages, and when there was not substantial experience with commercial operation of OSW farms. There is an obvious tradeoff when considering the tenor of power purchase contracts – shorter contracts reduce the period of time over which consumers receive PPA products (e.g., energy, RECs), limit the delivery obligation of producers, and open up the possibility of pursuing market revenues at the end of the contract term. Longer contracts extend the period of product quantities for consumers and delivery obligations of producers. This extension may reduce the opportunity to earn merchant revenues at the end of the product term, but, on the other hand, it would lower project exposure to market risk and increase revenue certainty, lowering PPA costs.

The contract tenor does not materially change the underlying cost to develop, permit, site, manufacture, construct and operate the OSW project. Consequently, extending the contract term extends the period of payment, and thus from the consumer perspective will typically not only increase delivered quantities, but will also lead to lower unit costs for the contracted commodities. Over the long run, an extended term may be seen as a positive or negative attribute – if in the later years the market cost of electricity increases more quickly than the escalation terms in the contract, the contract will continue to be viewed favorably; if in later years market prices decline or increase more slowly than contract escalation terms, the contract may be viewed at that point in time as costly for consumers.

However, as noted previously, a narrow focus on the cost of electricity to consumers fails to evaluate OSW development in the relevant context. Consumer impacts are extremely important, but OSW contract prices must be viewed against the framework of GHG emission reduction abatement costs. We should be asking: are there lower cost alternatives to achieve economy-wide GHG reductions, particularly in the near- to mid-term, and does OSW at the current contract price offer an economic strategy to achieve states' GHG emission reduction mandates? For many coastal states, the answers are almost certainly yes; at the moment, there does not appear to be a more cost-effective way to meet the climate mandate than through electrification and coincident decarbonization of the electric sector, and rapid development of the OSW industry is an economic prerequisite to the latter.

With these goals in mind, now is the time to extend the maximum contract tenor in state procurements of OSW to thirty years, as was recently done in Rhode Island.[28] Extending the maximum contract tenor will minimize the electricity rate impact of OSW procurements in the near term as the OSW industry develops and states transition to decarbonized economies, thereby reducing the cost to achieve states' GHG mandates. It will also support greater development of OSW by allowing bidders to determine the appropriate balance of financing costs versus contractual obligations based on their viewpoint of future market opportunities and turbine lifetime expectations.

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[27] Beiter, P, et al., "Comparing Offshore Wind Energy Procurement and Project Revenue Sources Across U.S. States," National Renewable Energy Laboratory, June 2020, available at https://www.nrel.gov/docs/fy20osti/76079.pdf, at p. 41.

[28] "Request for Proposals for Long-Term Contracts for Offshore Wind Energy," Rhode Island Energy, October 13, 2023, available at https://ricleanenergyrfp.com/wp-content/uploads/2024/01/2023-ri-osw-rfp-final-redlined-1-18-2024.pdf, at p. 6.

To protect consumers, solicitations could require developers to demonstrate that the project is designed to have a life exceeding the proposed contract tenor, including the design features that extend its life beyond the typical 20-25 years when a longer tenor is proposed, and include terms in the PPA to limit consumers' liability for projects whose realized lifespans turn out to be shorter than the term of the contract. Additionally, states should coordinate regionally to set these terms consistently to further reduce contracting costs.

De-risking/Indexing Mechanisms

Recent experience exposed the downsides associated with passing on all commodity pricing and inflationary risks to OSW developers: project defaults, stalled momentum in adding OSW capacity, a bad look for the industry and policymakers, and the need to regroup and revise the solicitation and procurement process. Due in part to the multi-year timeline between bid-date and notice-to-proceed,[29] OSW developers simply cannot lock down all vendor prices and related costs by the time bids are finalized and submitted in response to state-driven solicitations, and certainly cannot lock down financing costs. Under these circumstances, OSW procurements are subject to a high degree of risk associated with unexpected exogenous factors.

In recent years, this risk has been borne out with rapid economy-wide and industry-specific inflation and commodity price increases leading to multiple defaults on contracted OSW projects in the Northeast.[30] In particular, there has been a mismatch between the pace of OSW project growth and the available manufacturing and construction capacity in the OSW industry that has led to vendors increasing prices consistent with prevailing conditions of supply and demand. Vendor price increases have outpaced and exacerbated inflation and increases in the prices of underlying commodities.[31]

Despite it being a somewhat painful learning process, states and developers responded constructively to these events, working together to establish procurements and contracting terms that have de-risked many of the least controllable exogenous industry, economic, and financial factors to ensure states remain on track to meet OSW capacity targets while balancing consumer and developer interests. For example, Massachusetts and Connecticut have introduced inflation adjustments that provide a one-time adjustment to the contract price based on changes in inflation indices between the awarding of the bid and the beginning of construction.[32] This adjustment has provided greater stability for the development of bids, reduced risk, and thus reduced financing costs and costs to consumers, as well as increasing the likelihood projects stay on track in the face of unexpected cost increases. When the expected volatility in input prices is high and developers must set a fixed bid price, developers will factor

[29] An example is the 132-MW South Fork Wind project off Rhode Island, which received a permit in 2013, received their power offtake contract in 2017, and began construction in 2022. *See* Musial, W, et al., "Offshore Wind Market Report: 2023 Edition," U.S. Department of Energy, August 24, 2023, available at https://www.energy.gov/sites/default/files/2023-09/doe-offshore-wind-market-report-2023-edition.pdf, at pp. 10, 28, 38.

[30] McDermott J. et al., "Offshore wind project cancellations jeopardize Biden's clean energy goals," PBS News, November 4, 2023, available at https://www.pbs.org/newshour/nation/offshore-wind-project-cancellations-jeopardize-bidens-clean-energy-goals.

[31] *See* DiGangi D., "Wind turbine market improves, but higher costs may linger in 2024: BNEF," Utility Dive, December 21, 2023, available at https://www.utilitydive.com/news/offshore-wind-turbine-market-cost-developers-china/703256/.

[32] Moore, D. and D. Hutchinson, "States Adjust Offshore Wind Strategy After Project Cancellations," Bloomberg Law, November 9, 2023, available at https://news.bloomberglaw.com/environment-and-energy/states-adjust-offshore-wind-strategy-after-project-cancellations.

in the volatility by raising the fixed bid price. On the other hand, providing developers the ability to escalate (or reduce) their price based on realized costs benefits consumers if price levels are low.

This recent experience, and the response of states and developers to unexpected outcomes, is a good sign for the continued evolution of the solicitation and procurement process, and the continued growth of the industry in the U.S. There are at least four ways that states and the industry can continue to build on this progress:

- *Timing* – as noted previously, a major risk is the inclusion in solicitation structures of rigid dates for commercial operation and for permitting, siting, and other interim milestones. These terms and conditions are set in the PPAs and thus it is within the PPAs where policymakers should adjust the standard contracts to allow for variations in or extensions of CODs and milestones. This adjustment will, in the long run, have relatively minor impacts on states' procurement and GHG emission reduction goals and mandates, while providing significant development flexibility to the industry as a whole; flexibility that can significantly de-risk development challenges.
- *Indices* – Multiple states, such as Massachusetts and Connecticut, have incorporated indices in OSW contracting structures that allow prices to vary in accordance with inflation and broad commodity pricing indicators.[33] States and developers should continue to refine these indexing structures. States could also consider approaches to more specifically align with the actual commodities and services used to develop, construct and operate OSW and coordinate them cross-state to reduce contracting costs. For example, indices could evolve with the materials, equipment, and labor categories actually used in OSW project development, contracting, and construction.
- *Component-specific price adjustments* – One approach, which states have not adopted but which could be a meaningful tool to lower prices, is to allow developers to link PPA price adjustments to changes in specific input packages, rather than underlying indices. A primary driver of OSW component costs is a constrained supply chain and the inability of manufacturers to reliably price their equipment. This risk could be alleviated by allowing developers an opportunity to propose a price adjustment to their PPA for changes to the cost of major items between the bid-date and the notice-to-proceed, with transparent pricing information provided explicitly in support of the adjustment. As one example, a bidder could identify that their PPA price is based on an expected cost of $X for the wind turbine component. The developer would agree to share cost info for the identified component (i.e., the wind turbine package) with the regulator, and agree that if the costs were above or below the identified cost, then the tariff would be adjusted per an accepted formula.
- *Inflation* – Inflation continues to impact a project throughout its lifetime, but in some cases the inflation protection mechanisms offered by states limit inflation coverage to only 1-2 years after contract award (e.g. Massachusetts).[34] Rather than inflation protections that only cover the immediate post-award period,

[33] Moore, D. and D. Hutchinson, "States Adjust Offshore Wind Strategy After Project Cancellations," Bloomberg Law, November 9, 2023, available at https://news.bloomberglaw.com/environment-and-energy/states-adjust-offshore-wind-strategy-after-project-cancellations.
[34] "Indexing Adjustment Mechanism Information Filing - Revised," Massachusetts Department of Public Utilities, February 5, 2024, available at https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/18578719, at p. 2.

states could consider allowing or requiring inflation indices to apply from the date of bid to the COD, as done in New York,[35] or even through some period of contract delivery.

In short, it is important at this stage of OSW development to include indexing and/or escalation provisions in procurements with the goal of minimizing or hedging project risks. States should work towards continuing to refine indices used over time based on experience in each solicitation cycle, and work towards full compatibility in indexing mechanisms across state contract structures, particularly across states within a given region and/or that establish joint procurements.

Security Requirements, Milestones, and CODs

Developing, permitting, siting, and constructing major OSW projects – and in most cases significant supporting transmission infrastructure – is not easy. And there is something of a chicken and egg issue – major development, permitting, equipment, supply and construction contracting, and project construction activities cannot begin in earnest before solicitation is completed and contracts are signed. Yet contracts cannot be signed without confidence that the project developer has the capability and commitment to bring the project to completion. In combination with procurement due diligence (with respect to bidder abilities, commitment, and development plans), contract security requirements are an important element of contracting to ensure that, absent significant unexpected events, the project will come to fruition; and if not, consumers will not be harmed.

Recent significant and unexpected events illustrate the role of contract security requirements, and to some extent have stress-tested the OSW industry and the states with respect to OSW procurements in the Northeast U.S. As previously discussed, substantial changes in the conditions of global supply and demand for OSW components and construction, discontinuous changes in the costs of materials critical for the construction of OSW farms and associated transmission infrastructure, inflationary pressures, and rapid increases in interest rates combined to increase the costs of components, construction, and financing of OSW projects. Several projects, such as Ørsted's Ocean Wind 1 and Ocean Wind 2 in New Jersey, which had already been selected and contracted in prior OSW procurements, but had not locked down orders for manufactured components, construction, etc., requested contract price changes and ultimately were withdrawn.[36]

One ramification of these events was an increase in security requirements required in some of the subsequent OSW solicitations. The purpose of the increases was to provide a disincentive to developers from backing out of future contracts. For example, in Massachusetts, the security deposit went from $40,000 per MW (with 50 percent

[35] "Purchase of Offshore Wind Renewable Energy Certificates Request for Proposals ORECRFP23-1: Summary of Revisions," New York State Energy Research and Development Authority, January 12, 2024, available at https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z000003cmKBEAY, at pp. 52–54.

[36] Ford, N, "US offshore wind warnings pile pressure on 2024 auctions," Reuters, December 1, 2023, available at https://www.reuters.com/business/energy/us-offshore-wind-warnings-pile-pressure-2024-auctions-2023-12-01/; McDermott J. et al., "Offshore wind project cancellations jeopardize Biden's clean energy goals," PBS News, November 4, 2023, available at https://www.pbs.org/newshour/nation/offshore-wind-project-cancellations-jeopardize-bidens-clean-energy-goals.

provided up front) to $80,000 per MW plus additional security if the developer previously defaulted (with 100 percent provided up front).[37]

Increasing security requirements in response to prior cancellations is an understandable reaction to these events – however such increases in security requirements are not necessarily effective in ensuring that projects are developed on their proposed schedules, constrain project bidding flexibility, increase project exposure and financing costs, and ultimately lead to higher consumer costs without a sufficient corresponding benefit. Exogenous events will occur, and if extreme, will threaten the ability of the bidder to execute on the project at the contracted-for price. In such cases, the security requirements are unlikely to deter cancellation. More generally, the imposition of security requirements tied to milestones and CODs are not well aligned with the binary nature of project permitting and regulatory risk.

There are two security-related features that should be considered in future procurements and contract terms and conditions. First, states should consider specifically what action security requirements are meant to deter and establish reasonable security requirements that are no more than needed to create the deterrence. This evaluation should recognize that it is financially implausible to deter project withdrawal that stems from the sort of major movements experienced recently in broader economic factors affecting OSW project viability without having a large impact on project risk, financing costs, and bid prices.

Second, and as noted previously, relaxing milestone and COD constraints – possibly with incentives to achieve them sooner (rather than penalties for missing rigid milestone requirements) – can introduce the sort of flexibility the industry needs in aggregate to provide space to adapt to changing industry circumstances, lower risks and finance costs, reduce bid prices, and ultimately achieve states' GHG emission reduction mandates.

D. Transmission

To-date most OSW solicitations and bids have involved project-specific transmission components and system interconnection study and upgrade obligations.[38] Yet as the first wave of solicitations is completed and projects interconnected, states and regions will quickly run into a far more challenging, complex, and costly environment for the efficient and reliable interconnection of OSW capacity resulting from the procurements. It is vitally important to proactively consider alternatives to addressing the needs of each state or region's transmission system in absorbing several GW (or more) of new OSW capacity and determine how to procure that capacity and pay for it.

[37] For example, under Massachusetts' proposed security deposit requirement, a previously defaulted developer would have to post a security deposit of $144 million on a 1,200 MW project, while developers who have not previously defaulted would only need to post $96 million. *See* Mohl, B, "Mass. Raises eyebrows with offshore wind security deposit stance," Commonwealth Beacon, December 14, 2023, available at https://commonwealthbeacon.org/energy/mass-raises-eyebrows-with-offshore-wind-security-deposit-stance/; "Request for Proposals for Long-Term Contracts for Offshore Wind Energy Projects," Massachusetts Department of Energy Resources, May 7, 2021, available at https://macleanenergy.com/wp-content/uploads/2021/05/83c3-rfp-and-appendices-final.pdf, at p. 27; "Request for Proposals for Long-Term Contracts for Offshore Wind Energy Projects," Massachusetts Department of Energy Resources, August 30, 2023, available at https://macleanenergy.com/wp-content/uploads/2023/08/83c-rd4-rfp-8.30.2023.pdf, at p. 29.

[38] "Purchase of Offshore Wind Renewable Energy Certificates, Request for Proposals ORECRFP23-1," Revised Date January 12, 2024, NYSERDA, available at https://portal.nyserda.ny.gov/servlet/servlet.FileDownload?file=00P8z000003cmKBEAY, at pp. 20, 23.

Additionally, most OSW projects to-date have involved interconnections that are relatively easily absorbed in the current system. This situation is about to change as we move to additional procurement tranches.[39] And it will change in unpredictable ways that will vary by year, by state/region, and by the timing, location and type of OSW interconnection. As regions reach saturation with respect to their ability to absorb more OSW capacity, the interconnection and system upgrade costs will likely increase sharply for most, if not all, projects. Further, the continued balkanization of OSW transmission interconnection could lead to higher overall costs to consumers to meet states' GHG emission reduction goals and reduced reliability if each project is dependent on a single line to bring power to shore.[40] Fortunately, states and associated regional transmission system operators understand this predicament, and are taking steps to address it in a coordinated, proactive way.

For example, New Jersey has engaged in solicitations of transmission network upgrade projects based on a comprehensive planning evaluation in concert with the PJM Interconnection,[41] seeking to add network interconnection projects in advance and in sufficient capacity to integrate large increases in OSW capability (which are to be procured separately). While OSW projects in New England have embedded transmission interconnection (and any necessary upgrades) as part of the OSW project development and price, the New England Independent System Operator (ISO-NE) and the New England states have worked together to conduct forward-looking studies of the transmission needed to reliably interconnect to the system new on- and off-shore wind and solar capacity developed as merchant projects or through state procurements. Moreover, ISO-NE has filed with FERC the details of a comprehensive, coordinated planning process focused on advanced review of system integration needs.[42] Most recently, ten Northeast and Mid-Atlantic states executed a Memorandum of Understanding to facilitate interregional transmission planning and development, committing to sharing information and engaging relevant government entities as well as local and regional transmission planners in order to achieve shared transmission benefits, including reduced interconnection costs for OSW.[43]

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[39] "Wasser, M, "As offshore wind plans grow, so does the need for transmission," WBUR, October 18, 2022, available at https://www.wbur.org/news/2022/10/18/offshore-wind-transmission-lines-grid.

[40] "DOE Reports Chart Path for East Coast Offshore Wind to Support a Reliable, Affordable Electricity System," U.S. Department of Energy, March 21, 2024, available at https://www.energy.gov/articles/doe-reports-chart-path-east-coast-offshore-wind-support-reliable-affordable-electricity.

[41] New Jersey Board of Public Utilities engaged in the first State Agreement Approach (SAA) planning effort with PJM in 2022. Their second SAA is in progress, but currently on pause. *See* "New Jersey Board of Public Utilities Selects Offshore Wind Transmission Project Proposed by Mid-Atlantic Offshore Development and Jersey Central Power & Light Company in First in Nation State Agreement Approach Solicitation," State of New Jersey Board of Public Utilities, October 26, 2022, available at https://www.nj.gov/bpu/newsroom/2022/approved/20221026.html; "Murphy Administration Announces Developments in Offshore Wind Industry," State of New Jersey Board of Public Utilities, May 28, 2024, available at https://www.nj.gov/bpu/newsroom/2024/approved/20240528.html.

[42] On May 9, 2024, ISO-NE filed Phase 2 of the Longer-Term Transmission Planning (LTTP) tariff changes with FERC, which would give New England states a process to evaluate and finance significant transmission upgrades as well as allow the ISO to include cost-saving regional benefits in its evaluation process. *See* "ISO-NE's longer-term transmission planning changes give states new opportunities to develop policy-based transmission projects," ISO Newswire, May 15, 2024, available at https://isonewswire.com/2024/05/15/iso-nes-longer-term-transmission-planning-changes-give-states-new-opportunities-to-develop-policy-based-transmission-projects/.

[43] "Memorandum of Understanding: Northeast States Collaborative on Interregional Transmission," Johns Hopkins Ralph O'Connor Sustainable Energy Institute, July 9, 2024, available at https://energyinstitute.jhu.edu/wp-content/uploads/2024/07/MOU-Northeast-States-Collaborative-on-Interregional-Transmission.pdf.

These developments are welcome. There is no doubt that as future solicitations seek to increase the amount of OSW developed in response to state procurements, the integration of this amount of OSW into the state and regional transmission networks will – absent appropriate and proactive planning – become a fundamental roadblock to the growth of OSW. Thus, the time is now for states to address this potential barrier proactively, recognizing the following key elements:

- As is done in New Jersey, and has been initiated in New England, states must coordinate with their RTOs in structured, coordinated transmission planning processes to proactively plan for, study, and evaluate *well in advance* system transmission needs under plausible schedules for the interconnection of OSW.
- The procurement of power system network components and upgrades needed for the integration of OSW should be separated from OSW project procurements, and the needed transmission infrastructure must result from coordinated, regional planning, analysis, and procurement.
- The process of planning for and procuring needed network components and upgrades must begin now, and be pursued with haste, given the amount of time it will take to plan for, procure, develop, and construct the level of needed transmission infrastructure.
- States need to coordinate and proactively address questions related to how to allocate the costs of infrastructure needed solely or primarily for the integration of OSW over time, to the extent they are not already addressed in existing market rules tariff language, or utility interconnection requirements to ensure stakeholder support for new transmission projects.