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## Massachusetts Ocean Management Task Force

### Comments of Robert H. Russell

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Dear Members of the Massachusetts Ocean Management Task Force:

Thank you for this opportunity to submit these comments to the governor's Ocean Management Task Force. They build on briefer comments delivered to you in person during the October 17, 2003, Task Force meeting at the New England Aquarium in Boston. I apologize for not providing them to you sooner; I hope that they may still be of use.

My name is Robert H. Russell, and I teach environmental law and policy, and related subjects in undergraduate, graduate and professional settings at universities and law schools in the Boston area. At present, I am a lecturer in environmental law in the graduate Department of Urban and Environmental Policy and Planning at Tufts University. I have recently submitted for publication a law review article that examines the potential for the development of offshore wind power in Massachusetts and elsewhere, particularly in the coastal zone. I also am an attorney currently admitted to practice in the Commonwealth, and serve as an environmental consultant to nonprofit organizations and government agencies. None of my clients is directly involved in wind power development in the Commonwealth.

### I. Introduction

Your task is an important one, with potentially far-reaching consequences.

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My comments today focus on offshore wind power, although their implications are broader. My reasons for focusing on wind power are several: (i) this is the subject of my recent legal and policy research and writing<sup>1</sup>; (ii) a major impetus for the Task Force process has been concern about several proposed offshore wind energy projects in or near Massachusetts territorial waters – particularly the 130-turbine, 420-megawatt (MW) proposal submitted by Cape Wind Associates for Horseshoe Shoal between Nantucket and Cape Cod; (iii) Massachusetts – like several other states in the region – has made a major commitment to increasing the percentage of electricity consumed by its businesses and residents that is generated by renewable resources, and offshore wind power is one such resource that ought to be immediately attractive – economically and environmentally – to our state and to others on the New England power grid; and (iv) if the principles and policies that the Task Force adopts are not robust enough to guide the responsible siting of utility-scale wind power, then an independent observer might conclude that this process has failed.

I will keep these comments brief.

## II. The Argument

### A. Large-scale wind power is needed to meet our ambitious environmental goals

A major commitment to clean energy will be necessary to address the global environmental and public health impacts of our long-standing fossil fuel-based energy policy, both in the Commonwealth and across the country.

To address those impacts – particularly the threat posed by climate change – Massachusetts has adopted a renewable energy portfolio standard requiring that, by next year, 2.0% of all electricity consumed in the state be generated by renewable resources. This rises to 4.0% by 2009, with likely annual increases of 1.0% thereafter. Apart from new biomass – which brings its own environmental problems – wind is the only major eligible resource now available or likely to be available by the various deadlines established by the renewable portfolio standard. Were it to go on line next year, the 460-MW Cape Wind project, standing alone, would just about satisfy the portfolio standard's 2004 requirements. Two Cape Winds would be needed by 2009 – and another project

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<sup>1</sup> It is to be published in vol. 31, no. 2 of the *Boston College Environmental Affairs Law Review*, forthcoming in late winter, 2004.

of its size every two years thereafter. In other words, without renewable development of the scope and dimension of the wind farm proposed for Horseshoe Shoal, the Commonwealth will be unable to meet the commitments its political and policy processes have already made.

It is a virtual certainty that nothing approaching this level of capacity can be sited on land, either in Massachusetts or sufficiently nearby. Furthermore, based on recent experience, it is far from clear that anything this ambitious could be sited elsewhere in New England, even if some part of the renewables standard was satisfied by developing biomass or more expensive, smaller-scale renewables (e.g., methane gas recovery, photovoltaics, tidal power). One is almost forced to conclude that, to meet our current commitment (which should not be confused with what our commitment ought to be in order to address climate change), a significant percentage of that growth will have to occur offshore. That means that our regulatory system must be able to accommodate that growth. At present, it cannot.

B. The offshore coastal zone offers economic advantages for wind power

In developed areas like southern New England, one of the best venues for siting wind generation is offshore. But as a practical matter, technological limitations render offshore wind feasible only in relative shallow waters – those that are no more than 50-60 feet deep (and preferably less than 30 feet). Such areas are for the most part found in the seaward coastal zone – that is, in state jurisdictional waters no more than three statute miles from shore.

Compared to its terrestrial counterpart, near-shore wind power can offer certain advantages. First, it allows generators to be sited near consumers, reducing transmission costs. This is particularly important in view of (i) the likelihood that land-based alternatives will be located in northern New England, far from major population centers; (ii) the reality of existing transmission constraints; (iii) the political difficulty and expense of siting new transmission lines in new corridors; and (iv) the perhaps more compelling environmental and aesthetic considerations that may arise from land-based wind farms.

Second, proximity to shore keeps key capital costs (e.g., grid connection) and certain operating costs (e.g., maintenance) to a minimum. Third, offshore locations promote economies of scale in two ways: (i) the optimal size of the wind farm is larger; and (ii) the optimal size of each turbine is larger. While these factors interact (and it is not my point to argue that bigger is always better),

the least that can be said about offshore siting is that it increases the options for developers and regulators.

Fourth, even if the future of utility-scale wind generation in Massachusetts is somewhat hazy right now offshore, its future on land – especially near population centers – is all but occluded. Current zoning restrictions, tight land-use controls, decentralized political governance, predictably intense public opposition, lack of technically suitable sites, and potentially severe conflicts with other uses and users – including aviation, recreation and conservation – cast doubt on whether a significant land-based resource will ever be developed near the populous areas of Massachusetts and its neighbors. Finally, and perhaps most important, the resource itself is of considerably lower quality in most parts of terrestrial New England. Nearly all areas within 50 miles of major cities southern New England simply do not offer utility-scale wind speeds, at least not in light of the technologies in use today or on the horizon.

In contrast, the offshore resource is generally better, often much better. Wind speeds are consistently higher – perhaps by 25% or more (note that the energy content of wind increases as the cube of average wind speed – double the speed and energy increases eightfold). When winds are free of terrestrial impediments they are subject to less frequent, dramatic and random fluctuation of the type that impede efficient operation and damage a turbine or force it off line.

C. Offshore wind power has a record of success elsewhere – and far more is planned

To put this in perspective, it should be noted that other nations have sited or are planning to site a substantial amount of offshore wind. The leader is Denmark, a nation that has 84% the population of Massachusetts, is twice its size, and consumes 40% less power.

Denmark obtains nearly 20% of its electricity from the wind, and 15% of that is from offshore wind power. Offshore projects have successfully operated there for more than a decade. In December, 2002, the world's largest offshore wind farm went into production in the North Sea. The current Danish energy plan contemplates that wind power will supply half of the nation's electricity by 2030. Given the limited number of suitable sites on land, much of this new capacity is expected to be developed offshore.

Other nations have set ambitious goals as well. Germany, with the largest installed wind capacity in the world (at 12,000 MW, it accounts for a third of all wind generation on earth), is considering the development of an additional 12,000 MW offshore. The UK is moving forward with similar plans for at least 6000 MW and perhaps more. The nearest to realization is a proposal to supply 10% of Ireland's electricity from a 520 MW array to be sited 3.5 miles offshore in the Irish Sea south of Dublin. In short, recent and growing European commitment to wind power – both land- and ocean-based – is impressive. Of world wind resources, nearly three-quarters are located on that continent. Meanwhile, the entire U.S. share stands at only 17%.

D. The Massachusetts regulatory system appears designed to discourage offshore wind energy

Unfortunately, the strides to bring wind energy into the mainstream that the Commonwealth must make in coming years will be guided by a regulatory system that is both exceedingly Balkanized and predisposed towards discouraging utility-scale wind generation. It is both inordinately complex, and it operates as a one-way ratchet – one that is fully engaged only if being used to deny project approval.

This decentralized system is overseen by the state's Office of Coastal Zone Management. The necessary elements of the Coastal Zone Management Program are networked together by at least seven Memorandums of Understanding between the coastal zone office and a number of other agencies with some responsibility for environmental quality or development along the coast. Most of these documents were negotiated more than a quarter century ago. They are very general in nature. They refer to a Coastal Zone Management Plan (CZMP) that itself is at least as general, and – when it comes to the question of offshore wind power development – the source of contradictory signals. It is hard to imagine how a project of any significance could be sited in state waters, given the following:

- The state's Ocean Sanctuaries Act seems to bar all wind power development in state waters surrounding the Cape and Islands, and may restrict it in most other parts of the state's territorial ocean. Nearly this entire area – including the places in which the winds are most favorable – is in one of the five designated Ocean Sanctuaries.
- The state's Public Waterfront Act (Chapter 91) may effectively prohibit near-shore wind projects unless they are deemed to be coastal uses. Recently, the

state Department of Environmental Protection, which administers Chapter 91, determined that none of the offshore proposals pending in Massachusetts is water dependent. Thus, to be sited, a project would need to obtain a variance. This is a cumbersome, uncertain and potentially highly-politicized process.

- The most specific directive in the undated Memorandum of Understanding between the state's coastal zone management office and the state Energy Facilities Siting Board (EFSB), the agency with supervisory authority over significant supply-side electricity generation, is that the EFSB will require developers of proposed coastal power plants to suggest at least one land-based alternative.
- The enforceable portion of the state's CZMP is intensely ambiguous when it comes to whether wind power is or is not a water-dependent, and hence favored, use. The CZMP (at p. 78) says that an energy facility is coastally dependent if, for instance, it transmits energy from an energy facility in the coastal zone (e.g., a wind farm) to an inland location (e.g., Hyannis). Yet on the following page, the plan states that the only energy facilities considered coastally dependent are those that use ocean thermal, wave or tidal power to generate electricity (in other words, not wind power). Then, two pages later, the plan enigmatically notes that "wind power generation[ ] may be determined to be coastally dependent based on the nature of the specific project proposal." For a committed developer in need of serious financing, these contradictory statements do little more than offer a final glimpse of the fatal shore.
- The clearest statement in support of offshore wind power is to be found in the portion of the CZMP that is *not* enforceable: "[The Plan] encourage[s] ... the use of alternative [energy] sources such as solar and wind power," provided they have "minimal impacts on coastal resources and uses" ... [and it endeavors to] "assist in locating appropriate sites ..."
- The energy siting board, to which the CZMP's offshore power provisions most directly relate, has the authority to waive virtually all state and local requirements that would otherwise apply to a utility-scale offshore wind power proposal. However, it has not given any sign that it plans to do this.

In addition, the state may choose to block offshore wind power through so-called "consistency review" under the federal Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451-1465). Consistency review permits a state whose coastal zone is affected by a federal or federally-permitted project (e.g., any significant wind generation project) to file an objection and thereby halt the project or force its modification – if the project is found to be incompatible with an enforceable

component of that state's federally-approved coastal zone management plan. This effectively extends the shortcomings of the Massachusetts CZMP into federal waters – and thus to what is perhaps the most advanced utility-scale wind power proposal in the United States – Cape Wind's plan for Horseshoe Shoal.<sup>2</sup>

E. We must work hard to avoid deceptive analogies:  
Wind energy ≠ offshore drilling

Coastal zone management is a world of many standards – some vague, some broad and some at odds with others. In such situations, the powerful need for coherence may be met through alternative means – for example, by expanding simple (and perhaps simplistic) analogy into a richer and more deceptive narrative. The most pernicious of these is the narrative of offshore oil and natural gas.

Specifically, the risk is that the wind industry will be perceived as the new century's version of continuing efforts of the oil and gas industries to expropriate and exploit the outer continental shelf. But the comparison is inapt. The latter are depleting a non-renewable resource; the former offers an important means of halting that depletion.

Nonetheless, the language of fossil fuel exploration continues to be applied to offshore wind development. Because distinct physical consequences arise from the metaphors we choose, I hope that members of the Task Force will not allow themselves to be lured in this direction.

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<sup>2</sup> The Cape Wind project would be sited in federal waters, where, in general, the regulatory framework is simpler. However, relatively few areas in federal waters offer both strong, steady winds and shallow depths. An initial look at the data suggests that Horseshoe Shoal may be the only sizable area on the East Coast that lies outside direct state jurisdiction, while offering both of these advantages. (Despite Cape Wind's federal situation, the Commonwealth can still reach it to some extent – both under the consistency doctrine and by exercising regulatory control over the high-voltage cable the developer must run through state waters to reach the power grid.) A second offshore wind project, to be developed through a 100-140 MW request for proposals issued by the Long Island Power Authority, is under consideration off the southern shore of Long Island.

### III. Recommendations

To the extent that the Task Force continues to operate at a fairly general level, a point should be made about generality itself. Although it is perfectly understandable that this inaugural effort would focus on setting forth the basic principles from which more precise policy might later be derived, a risk attends this approach. General principles crafted by a group representing diverse and sometimes conflicting interests may assiduously avoid the most controversial (and important) questions, or, even more problematic, may embrace concepts that are quite capable of supporting a variety of irreconcilable viewpoints and policies.<sup>3</sup> I strongly urge the Task Force to confront this risk and minimize it.

A useful way to test draft principles in this regard is to return to the animating reason for the Task Force process. The Task Force might attempt to assess how a utility-scale wind power project would fare, both in light of its principles and without them. Although general goals and policies are not the same as an articulated regulatory regime, it is important to know whether or not they will be of assistance in clarifying matters. It truly would be a missed opportunity if we discovered later that the principles developed from a process that got started out of concern over several offshore wind power proposals was not able to advance the discussion and analysis of those very same proposals.

Here are more specific recommendations:

- *Integrate programs and internalize externalities.* The CZMP and the federal Act under which it was created are highly integrative in structure and purpose, if not in result. Massachusetts should consider a more centralized coastal program. Although potential strategies are many, here are several that could be supported through carefully crafted principles:
  - ✓ The benefits of wind power and other renewable resources in the coastal zone typically are spread over a wide area (indeed, globally), while the perceived detriments<sup>4</sup> tend to be focused on narrow populations.<sup>5</sup>

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<sup>3</sup> Draft Principle #1 could be a nascent example. It speaks in terms of net societal benefits (an aggregate balancing function), and “the public's right to use and enjoy the ocean” (involving rights that are personal and tend not to be fully subject to depletion by efficiency calculation).

<sup>4</sup> This is not to say there will be no downside in any location. Regulators do need to carefully review every proposed project's impacts on wildlife, on ecosystems and on other users.



Proposals in this posture tend to be defeated. In light of this unfortunate reality, the principles could be crafted to help level the playing field.

- ✓ The Commonwealth should move toward a more centrally coordinated coastal zone program, with fewer agencies involved in the process as directly as they are now.<sup>6</sup>
  - ✓ The CZMP should be updated to reflect the realities of the new century. The current plan is more than 25 years old. That alone has been the source of many problems. The Task Force principles should support periodic updates to ensure this does not continue.
- *Apportion the ocean by priority.* The prevailing view is that zoning does not work very well – its legacy on land is one of invidious exclusion, and it is far too blunt an instrument for crafting a nuanced, multi-level social and economic policy anywhere. This is particularly true in the sea, where property “rights” are elusive and uses can be highly fluid.

Nonetheless, an approach might be adopted to create multi-layered “priority areas” in which certain activities are given preference, and others discouraged. This would build on the concept of coastally-dependent uses, while offering several advantages, including: (i) potentially many more categories; (ii) development of a common means of comparison or aggregation; and (iii) provision for further categorical division within the coastal geography, along all dimensions – vertical, horizontal and temporal. This approach would not attempt to achieve perfect numerical clarity, or be designed to effortlessly resolve hard cases. However, it could generate clear answers in circumstances where they now are lacking, and thus mitigate the enormous uncertainty surrounding the legitimacy of many coastal uses. Today such uncertainty tends to be resolved by the less-than-rational endorsement of whatever the status quo happens to be – an exercise that, obviously, is not policymaking.

- *Support local options.* Another strategy would encourage shoreline communities to create their own local priorities – perhaps restricted to uses with few spillover effects. Again, the right Task Force principles could create momentum here.

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<sup>5</sup> One of these groups consists of coastal property owners, certainly not a particularly deserving sub-class, given that they essentially have the right to keep the public off most of their beach property most of the time, and – more broadly -- that offshore wind power in Massachusetts has environmental justice implications for those living in less grand settings.

<sup>6</sup> I wish to distinguish the state’s highly-regarded Office of Coastal Zone Management from the disaggregated system that it is required to try to coordinate.

- *Do not rely on the public trust doctrine.* While coastal areas are certainly imbued with the ancient public trust (as well as the regulatory provisions of Chapter 91), the public trust doctrine has developed from the common law and represents a particularly unwieldy doctrinal instrument for mediating among myriad coastal uses – some of them very new. In addition, the doctrine tends to shift regulatory decision-making to the courts. With all due respect, an expert regulatory agency is better suited to this task.
- *Promote change by effectuating policy “on the ground.”* Major changes in the way we think about using the coastal zone might best be analyzed and understood through suitable pilot programs or “real life experiments.” A classic example would be utility-scale offshore wind power. We have no experience in the regulation of projects that are 50 to 400 MW in size, and may well never be able to develop full competence if that competence must somehow be gained in advance. The data such a project would generate would be of enormous assistance in crafting a more permanent regulatory framework. A decision to move forward in this way – step by step – will set limits process and outcome, while giving the public and policymakers time to learn practical lessons from the real world. In appropriate cases, Task Force principles should be designed to encourage the use of an “adaptive management” approach like this.

Larger issues remain. A major one is how we think about the environment, especially our physical landscape.<sup>7</sup> The notion of untamed wilderness is woven deeply into American consciousness and culture. Yet wind power and other soft energy paths will quickly become dead ends if we are not able to countenance human activity lodged amid – and integral to the long-term health of – our “natural” backdrop. Indeed, unless the human and the wild can be integrated within a middle landscape, we may never as a society be able to address the most pressing of today’s environmental problems.

#### **IV. Conclusion**

The realistic regulation of offshore wind energy should be the benchmark for a new coastal management regime. But wind power also is an energy goal well worth pursuing – for public health, for social equity, for the environment and for our security as a nation. I hope that the Task Force agrees that we have a rare opportunity to bring the state’s coastal policy into line with the demands and challenges of a new, uncertain century.

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<sup>7</sup> This is discussed eloquently in earlier comments presented to the Task Force by Jay Wickersham, former state MEPA director.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'R. H. Russell', is written above a horizontal line.

Robert H. Russell

DATE: December 1, 2003  
[Revised February 6, 2004]