

Moving Forward on Renewable, Low-Carbon Energy
From America's Oceans

Testimony of

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Introduction

Madame Chairman, Mr. Chairman, and Members of the Committee, I am honored to appear before you today to present the recommendations of Environmental Defense on how to manage ocean energy resources effectively, to provide economic and global-warming benefits while protecting the health of ocean ecosystems.

As many of you know, Environmental Defense is a worldwide, not-for-profit organization, whose hallmark is "finding the ways that work," environmentally, economically, and legally. Our organization is deeply committed to durable strategies that meet people's needs for energy while taking dramatic action to reduce global warming pollution. Achieving this goal will entail the use of a variety of tools including energy conservation and renewable energy production.

I currently serve as Principal Scientist for Oceans and Estuaries for Environmental Defense. While my training is in marine and estuarine ecology, my work experience has focused on sustainable fisheries, and coastal resource and water quality protection. I have worked for Environmental Defense since 1988, with special attention to integrated and effective management of coastal and marine ecosystems; I helped form our Oceans Program in 1996. Prior to coming to Environmental Defense, I worked in state government in North Carolina, serving as director of the first National Estuary Program certified under the Clean Water Act of 1987, the Albemarle-Pamlico National Estuary Program.

In addition, I have served as chair of the South Atlantic Fishery Management Council's Habitat and Environmental Protection Advisory Panel for most of the last decade. In that role, I have worked very closely with agency staff on policies to protect essential fish habitats (EFH) from energy development activities, on measures to protect both shallow and deep-water coral ecosystems, and on drafting one of the nation's first comprehensive Fishery Ecosystem Plans (FEP) for the U.S. Southeast region, which considers how non-fishing ocean uses, such as offshore energy, effect fish stocks.

Today, I draw from these experiences, to recommend measures that Congress can take to ensure that as America begins in earnest to look to the sea for energy to light our cities and fuel our economy, a rational system that aligns incentives with conservation is in place to protect our priceless ocean legacy and the coastal communities that rely upon it.

“Blue” Ocean Energy

Meeting America's on-going energy needs while at the same time addressing the global warming challenge will require a new age of energy conservation, and the tapping of sustainable options for ecofriendly energy production. There is no doubt that firm limits on emissions of greenhouse gases, and increased energy conservation, are critical to slowing global warming. But it seems increasingly unlikely that conservation alone can meet the nation's energy demands. As the world turns to “low carbon” or “clean” energy sources that minimize contributions to global warming, it is increasingly likely that the sea will be a part of the “greening” (or, maybe more appropriately in this case, “bluing”) of our energy-production portfolio.

First, let me make clear that there are key ocean energy sources (like wind, tide, wave, and current) that are potentially sustainable, and that will help us address global warming, while others will not help us move closer to a sustainable future (for example, methane clathrates from the deepsea).

In pursuing ocean energy sources that are better for the environment, I offer the following four key principles.

1. Ocean energy development should be based on clearly defined criteria, and consistent with a national policy of protecting and restoring healthy ocean ecosystems, including cumulative impacts.
2. The public should benefit from the use of public resources, and appropriate incentives should be in place to encourage green energy development; decision processes should encourage public engagement, and meet the highest standards of transparency.
3. The federal government should support the research needed to develop cutting-edge green technologies, to understand and mitigate their potential impacts, and to accelerate technologies that are less polluting, and more consistent with sustainable oceans.

4. The federal government should invest in the science needed to manage marine ecosystems effectively; government decisions should be based on the best peer-reviewed science.

Protecting Ocean Ecosystems

Today, it appears that while some ocean energy technologies have unacceptable impacts on coastal ecosystems, many others may have fairly low and manageable environmental impacts. Even so, our decision processes are not currently adequate to distinguish among projects that are consistent with sustainable oceans and those that are not.

To make the challenge even greater, many of the technologies available today have the very real potential for much greater cumulative impacts at larger scales. Little has been done to assess the consequences of commercial scale operations in the ocean, or to identify ways to minimize and mitigate those effects. For example, a small wave energy facility may have a negligible impact, but many such facilities or a very large scale facility could have adverse impacts on local circulation patterns that could be critical for maintaining transport of fish larvae, sediment and nutrient delivery, and other important ecological processes and services. Similarly, the way ocean energy projects are implemented, and the specific kind of technology employed, could have a large bearing on the size of their cumulative environmental impact. For example, slow-speed turbines that are phased in over time would be expected to have lower environmental impact than the damming of an estuary to construct a tidal barrage.

Incentives and Public Benefits

The ocean is a vast common resource, presenting significant challenges for policy makers on how to avoid unsustainable use while encouraging appropriate development. Few “use privileges” or other conservation incentives exist in the sea that could institutionalize orderly and controlled development of marine resources. Environmental Defense has recently completed a study of approaches that have been used in this country to manage public trust resources, called “Sustaining America’s Fisheries and Fishing Communities.” We found that while granting use privileges is a common tool in resource management, the way those privileges are administered can achieve other social benefits.

There is also a strong need for a new “social contract” with regard to ocean resource use similar to the evolution of natural resource policies on land, where emphasis has shifted through time from rapid extraction at all costs (“use-it-or-lose-it,” with no economic rents) to sustainable use (appropriate regulation coupled to positive incentives, and including economic rents, e.g. auctions of electromagnetic spectrum).

Current Challenges

Our Nation lags behind others in assessing, experimenting and investing in truly sustainable ocean energy technologies, and has fallen far short on investing in the science necessary to manage ocean ecosystems effectively. Basic information on the distribution,

abundance and function of marine habitats is woefully inadequate. In fact, much of the information available on deepwater ecosystems has been developed directly by private project proponents. Until we properly understand habitat function and oceanographic processes that support habitats and biodiversity, we will remain unable to adequately avoid impacts on important habitats, and mitigate for unavoidable impacts. Until we adequately understand the array of perspective technologies available, and their likely implications for marine ecosystems, it will remain difficult to plan for sustainable ocean energy.

Recent debates have centered on the risks and environmental dangers of specific installations, and on perceived impacts on coastal ways of life, rather than on defining broad science-driven criteria for ocean energy development that transcend individual projects while conserving coastal landscapes and seascapes. Certainly, coastal communities and other ocean resource users (e.g., fishermen) should have a voice in where development occurs. However, fully understanding the potential costs (such as habitat degradation) and benefits (including reducing the impacts of global warming) is critical to ensuring rational decision-making that is in the best interest of all. The “Not in My Backyard!” approach will not provide for the public interest.

The prevailing “thumb in the dike” attitude is entirely understandable, given the complexity and disarray of federal institutions. Management authority for ocean uses is split among many agencies with unaligned legal requirements. There is neither a clearly defined approval process for “blue” energy development nor are there set conditions for decision-making. Getting past this fractured system of ocean governance will require the development and implementation of programs that people can trust to ensure that the coastal environments they hold dear will not be destroyed by industrial development for renewable energy production.

It is very clear that we need updated governance systems that can guide ocean energy development consistent with maintaining high-quality marine and estuarine ecosystems. *A key task for Congress is to update our governance systems in order to guide renewable ocean energy development consistent with maintaining high-quality marine and estuarine ecosystems.*

Few people recognize that widespread coastal renewable energy production is not new in the United States. In fact windmills used to be prolific in the Southeast. While scouring the North Carolina Archives for historic documents, I found maps from the 1700s showing the locations of many coastal windmills. In addition, there are many old photographs of windmills from the 19th and early 20th Centuries spread throughout the Southeast coastal plain.

These past experiences, as well as those from around the world on ocean energy, hold important lessons for U.S. policymakers. It is clear that, despite being many years in the making, the expansion in technologies is still underway, and that – if properly understood and managed – America does not have to settle for damaging approaches to harness “blue” energy.

Effective Governmental Decision-making

The lack of effective governance systems in the sea is effectively enumerated in the final reports of the U.S. Ocean Commission on Ocean Policy and the Pew Oceans Commission. All analyses of threats to the Nation's oceans place the fragmentation of management authority by topic and geography at or near the top of the list.

We can ill-afford a continuation of ineffective governance. There is high potential for expansion of existing uses of our coastal and ocean waters and the Exclusive Economic Zone (EEZ) for mariculture, sand and gravel mining, phosphorite mining and others. In addition, a high potential exists for new uses including renewable ocean energy. It seems increasingly likely that the ocean of the near future will be far more complex than today.

There is great urgency in fixing this key problem of dysfunctional ocean governance before the looming expansion in ocean uses makes it impossible. The compelling need for clean, renewable energy production raises the stakes dramatically.

Unfortunately, the current morass of government programs competing for primacy in this area, and the apparent mission of decision agencies as primary advocates for energy production, compels coastal residents' skepticism. The complex mosaic of state and federal agencies with some responsibility for ocean energy management or regulation is daunting, with little organization in which potentially affected parties can have confidence.

Each of the federal agencies that makes decisions relating to the oceans has significant shortages of capacity in key areas needed to make sound and efficient decisions. Some of the key capacity needs are as follows:

- Technical capacity to develop and apply standards to minimize impacts on valuable fisheries and key ecosystems
- Scientific capacity to identify how to minimize ecosystem impacts, and to develop new research in strategic leverage points in ocean ecosystem protection
- Regulatory capability to quickly evaluate, propose and finalize decisions about proposed projects, and to monitor and enforce compliance with those decisions
- Confidence of the public in the agency's unbiased decisions

There is currently no one agency that has adequate capacity in each of these arenas. Rather than walk through the capabilities and drawbacks of the myriad agencies, I would like to point out a couple of positive developments in governance. None of these is adequate, and each of these has positive lessons the committee can draw upon as you move forward.

Positive Examples

While developing slowly, and constrained by existing tools and authorities, there is important movement toward ecosystem-based management at the regional scale, with which comprehensive energy policy can be unified.

In the U.S. Southeast by the South Atlantic Fishery Management Council (SAFMC) is creating an integrated ecosystem-based management plan, called the “Fishery Ecosystem Plan,” to protect and sustain the living marine resources of the region in the context of changing threats from both fishing and non-fishing activities. One small piece of that effort is a policy to protect essential fish habitats (EFH) from the potential impacts of energy development in the region, adopted in revised form by the SAFMC in 2006. The positive lesson from this effort is that an agency with an ecosystem mandate can identify the key habitats that need protection, and can establish approaches that emphasize science, transparency, inter-agency consultation and effective decision-making. While I remain concerned that the wind, wave and tidal sections of that policy need to be updated, and the approaches to elevate concerns about non-fishing threats are underutilized. The approach has proven effective in getting decisions on unacceptable impacts. I would suggest from this experience that regional fishery management councils can provide a helpful voice in shaping energy policy development when they are focused on their responsibility to fully protect EFH.

Similarly, the States are playing an important role in building a more integrated approach to marine ecosystems. The California Marine Life Protection Act, and the North Carolina Marine Fisheries Reform Act provide excellent examples of forward-looking legal frameworks that build from existing foundations, but apply new authority to protect key marine and estuarine ecosystems.

Now, many regions of the country are taking up the challenge that managing jointly held natural resources present. The Gulf of Mexico Coalition, the Great Lakes Regional Collaborative, and new interstate collaborations on the West Coast, the U.S. Southeast, and New England, represent important early strides toward the management of regional seas. In addition, important cross-state pollination is underway under the umbrella of the National Fish Habitat Plan, and its regional collaboratives.

Recommendations for Blue Energy

An effective management system for blue ocean energy in the outer continental shelf (OCS) needs to address several key challenges, including:

- 1) A national ocean policy that brings together the many expanding offshore uses under a unified vision for healthy and sustainable oceans.
- 2) Clearly defined criteria for decision-making that align incentives to provide for clean (i.e. low-carbon), renewable ocean energy development *and* conservation of the ocean environment.

- 3) A lead regulatory entity (such as an agency or regional council) with an ecosystem-protection mission and substantial capacity (including knowledge, authority, and funding) on both energy and marine ecosystem health.
- 4) A transparent and robust project planning and evaluation process that includes integrating input from stakeholders, states and other agencies;
- 5) Long-term development plans that:
 - meet the defined criteria for decision-making;
 - project and address cumulative impacts;
 - establish clear and efficient siting parameters for specific installations;
 - establish measurable objectives for evaluation;
 - are compatible with regional ecosystem plans;
 - are based on appropriate social and economic incentives and strong science, including enhanced investments in understanding and mapping benthic habitats;
 - have strong accountability measures for unanticipated adverse environmental impacts, such as performance bonding.
- 6) Sustained funding for ocean and energy science and management.

Conclusion

This generation must chart the course for a successful transformation from the wild-west mentality that characterizes our nation's marine frontiers to one of order and sustainable production of protein, minerals and energy in harmony with the protection of ocean ecosystems. It is inevitable that a sea-change will occur over the next few decades in uses of the territorial sea and the exclusive economic zone, from ad hoc fisheries and opportunistic energy and mining to a mixed use future. It will happen faster than anyone believes.

The opportunity exists to lay the foundation for an organized and efficient use of natural resources that is both sustainable and sustaining of coastal and marine ecosystems and communities, but it will not happen unless bold leaders seize this opportunity. Civil society can step forward by creating positive models, and identifying decision approaches that take into account multiple perspectives. Congress can lead by setting a high bar before widespread permitting ensues.