ATLANTIC WIND ENERGY WORKSHOP

July 12-14, 2011
Hyatt Dulles Hotel
Herndon, Virginia

PROGRAM

Hosted by the
U.S. Department of the Interior

Bureau of Ocean Energy Management,
Regulation and Enforcement
www.boemre.gov

WELCOME TO THE ATLANTIC WIND ENERGY WORKSHOP

"If we are wise with our planning,
we can help build a robust and
environmentally responsible
offshore renewable energy program
that creates jobs here at home."

Secretary of the Interior Ken Salazar

Meeting Objectives:

As part of the Secretary of the Interior's "Smart from the Start" wind energy initiative to spur renewable energy development on the Outer Continental Shelf, this workshop will assist the Department of the Interior's (DOI) Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) and its federal partners in environmental and technical reviews of wind energy areas and in the evaluation of new projects. Additionally, this workshop is part of the DOI-Department of Energy (DOE), Memorandum of Understanding (MOU) process to coordinate environmental monitoring and baseline studies in support of environmental assessment and consultations for siting and leasing in the **mid-Atlantic** wind energy areas.

Specific goals:

(1) Provide an update of recent and ongoing environmental and social sciences research conducted since the Worldwide Synthesis and Analysis of Existing Information Regarding Environmental Effects of Alternative Energy Uses on the Outer Continental Shelf workshop in 2007 and BOEMRE technology and safety studies on renewable energy;

(2) Identify key data needs and prioritize research gaps; and

(3) Develop partnerships and identifying potential synergies for future studies.

Following the meeting a workshop summary will be available.

Day One (July 12, 2011)
Plenary Session

8:00-8:45 **CIRRUS FOYER A** **Registration and continental breakfast**

8:45-12:15 **CIRRUS BALLROOM** **All groups until 12:15 PM**

Session Objective: The workshop focus is on the available data and information needs for site assessment and operational planning in the mid-Atlantic Wind Energy Areas. The plenary session is designed to set the stage for the breakout sessions (page 5).

8:45-9:15	**Welcome & Keynote Address** –Introduction and Scope of Workshop including DOI-DOE MOU, "Smart from the Start" research initiatives, goals of workshop including an update of knowledge; priority data gap identification, and developing partnerships and collaboration – *Michael R. Bromwich, Director*
9:15-9:40	**BOEMRE Renewable Energy Research and Regulatory Program Update** – An overview of the planning, leasing and environmental review processes for wind energy on the Atlantic OCS. This will include a brief overview of existing and expected survey guidelines for potential lessees. A state-by-state status will be given, including identification of current and future wind energy areas – *Maureen Bornholdt, Program Manager, Office of Offshore Alternative Energy Programs*
9:40-10:05	**Department of Energy** – An overview of market barriers for future wind energy projects, and how these barriers are being address under DOE funding opportunities – *Dr. Christopher G. Hart, Offshore Wind Manager, DOE*
10:05-10:25	**Energy Market and Infrastructure Information for Evaluating Alternative Energy Projects for OCS Atlantic** – Summary of BOEMRE Study – *Dr. Maureen Kaplan, Eastern Research Group, Inc.*

10:25-10:35 **Break**

10:35-12:15 **Federal Agency Panel** – In addition to BOEMRE and DOE, many other federal agencies have roles in offshore renewable energy, either as a regulator or resource agency. Panel participants will discuss each of their legal mandates and how the agencies are coordinating with each other to reduce duplication and increase efficiency.

- **Moderator** – *Joel Whitman, CEO, Global Marine Energy, Inc.*
- **BOEMRE** – *Maureen Bornholdt, Program Manager, Office of Offshore Alternative Energy*
- **FERC** – *Tim Konnert, Fish Biologist, Office of Energy Projects*
- **FWS** – *David Cottingham, Senior Advisor to the Director*
- **USGS** – *Walter Barnhardt, Director, Woods Hole Coastal & Marine Science Center*
- **NPS** – *Sarah A. Quinn, J.D., External Renewable Energy Specialist*
- **NOAA** – *Emily Lindow, Senior Policy Advisor*
- **FAA** – *John Page, Obstruction Evaluation Group*
- **USACE** – *James Haggerty, NAD Program Manager*
- **USCG** – *George Detweiler, Marine Transportation Specialist*
- **DOD** – *Frederick Engle, Office of the Secretary of Defense*
- **EPA** – *Susan E. Bromm, Director, Office of Federal Activities*
- **ACHP** – *Tom McCulloch, Senior Program Analyst*

Facilitated Q & A session

12:15-1:00 **Lunch – Bag lunches provided**

1:00-5:00 **ROCKBRIDGE ROOM Technology Assessment & Resource (TA&R) Program: Renewable Energy Studies session – Page 7-9**

CIRRUS BALLROOM

Day One facilitator for environmental sessions will be Brian Balcom, CSA International, Inc.

1:00-3:00 **Information Management and Data Sharing Products Panel** – Cross-discipline look at mapping and data issues in support of the science needed for planning, decision making and stewardship. Panel participants will discuss existing and future efforts, including Coastal Marine Spatial Planning (CMSP), geo-spatial databases, mapping products, and data portals. (10 minute briefs with Q & A at the end).

- **Moderator** – *Dr. Mary Boatman (BOEMRE)*
- **EcoSpatial Information Database** (ESID) – *Keld Madsen, Geospatial Services Manager, AMEC*
- **Habitat Mapping** – *Chris Caldow, Branch Chief, NOAA Biogeography Branch*
- **Sonar Mapping for Multipurpose Use and an Integrated Ocean and Coastal Mapping Standard** – *Dr. Brian Calder, NOAA/University of New Hampshire Joint Hydrographic Center*
- **Space Use Conflicts** – Developing a geospatial database compatible with the BOEMRE mapping system to assist in determining multiple uses offshore – *John Weiss, Industrial Economics, Inc.*
- **Mid-Atlantic Regional Council on the Ocean – MARCO Data Portal** – *Laura McKay, Program Manager, Virginia CZM Program, Dept of Environmental Quality*
- **Northeast Regional Council on the Ocean – NROC Data Portal** – *Nicholas Napoli, Director of Marine Planning Programs, Massachusetts Ocean Partnership*
- **OBIS-SEAMAP** – *Patrick N. Halpin, Associate Professor of Marine Geospatial Ecology, Duke University*
- **MMC** – The future of data sharing – Update on Multipurpose Marine Cadastre – *Christine Taylor (BOEMRE) and Brian Smith (NOAA)*

Facilitated Q & A session

3:00-3:15 **Break**

3:15-5:00 **LAYTON ROOM Social-Economics Afternoon Session: Overview of Assessment Focus (Environmental Assessment and NEPA) and the Cultural and Historic Resources Session –Page 9**

CIRRUS BALLROOM

3:15-5:00 **Developers Panel** – Monitoring from meteorological towers, buoys and survey plans, capabilities, limitations and lessons from the field.

- **Moderator** – *Jim Lanard, President, Offshore Wind Development Coalition*
- **Fishermen's Energy of NJ, LLC** – *Stephen O'Malley, Engineering Coordinator*
- **Deepwater Wind, LLC** – *Aileen Kenney, Director of Permitting*
- **Bluewater Wind NJ Energy, LLC & Bluewater Wind Delaware, LLC** – *Laurie Jodziewicz, Director of Permitting*
- **Atlantic Wind Connection** – *Kris Ohleth, Director of Permitting, Atlantic Wind Connection*

Facilitated Q & A session

5:00-5:30 **Day one summary and direction for day two**

Day Two (July 13, 2011)
Breakout Sessions

1) **Environmental Breakout Sessions: Monitoring and Baseline Studies**, CIRRUS AB ROOM – Pages 5-6
2) **Technology Assessment & Resource Program: Renewable Energy Studies**, ROCKBRIDGE ROOM – Page 8
3) **Social-Economic Breakout: Assessment Driven Issues**, CIRRUS CD ROOM – Page 10
4) **Birds, Bats and Offshore Wind Development: Remaining Information Gaps**, LAYTON ROOM – Page 11

Environmental Breakout Sessions:
Focus on Biological and Habitat Concerns Related to Environmental Monitoring and Baseline Studies
Breakout Sessions Day Two (July 13, 2011)

8:00-9:00 **CIRRUS FOYER A** **Registration and continental breakfast**

9:00-5:15 **CIRRUS AB ROOM**

Day Two facilitator for all environmental breakout sessions will be
Brian Balcom, CSA International, Inc.

9:00-10:45 State Planning and Information
Session Objective: To provide information on state ocean management plans and baseline study efforts, including obstacles encountered and remaining gaps and how this information is useful to the OCS development.

- **Moderator** – *Jennifer Ewald, BOEMRE*

9:00-9:15	**New Jersey Ecological Baseline Study** – *Dr. Gary A. Buchanan*
9:15-9:30	**Massachusetts Ocean Plan** – *Bill White*
9:30-9:45	**Maine State Planning Office, Maine Coastal Program** – *Matt Nixon*
9:45-10:00	**Rhode Island Ocean Special Area Management Plan** – *Grover Fugate*
10:00-10:15	**Developing Environmental Protocols** – *Michelle Carnevale and Dr. John King*
10:15-10:45	**Facilitated Q & A session**

10:45-11:00 Break

11:00-12:00 Broad Scale Habitat, Abundance and Distribution – Consultation Process
Session Objective: To provide an overview of the applicable environmental laws and regulations enforced by the other environmental agencies, namely NOAA and FWS, that govern offshore renewable energy activities. Provide the attendees with an overview of the Acts, the information, data, and applications to comply with the Acts, and the timing for these compliance documents.

- **Moderator** – *Kim Skrupky, BOEMRE*

11:00-11:15 **Marine Mammal Permits** – *NOAA, Michelle Magliocca*

11:15-11:30 **ESA Consultations** – *NOAA, Kellie Foster (invited)*

11:30-11:45 **ESA Consultations** – *FWS, Julie Thompson*

11:45-12:00 **Facilitated Q & A session**

12:00-1:00 Lunch – bag lunches provided

1:00-3:00 Broad Scale Habitat, Abundance & Distribution – Baseline Data
Session Objective: To identify what species are being studies in what locations, during which seasons, using which technologies, and if there is any data (or preliminary data).

- **Moderator** – *Kim Skrupky, BOEMRE*

1:00-1:15 **Fisheries Distribution & Abundance** – SASI model (What does the model tell us?) and its applicability to provide baseline information on wind energy areas – *Michael Fogarty*

1:15-1:35 **Fisheries Management Council Perspective: Spatial Aspects of Fishery Management Plans** – *Tom Hoff, MAFMC & Michelle Bachman, NEFMC & Roger Pugliese SAFMC*

1:35-1:50 **NMFS Surveys** – *Dr. Sofie Van Parijs, NMFS*

1:50-2:05 **AMAPPS** – Update on this multi-agency project – *Kim Skrupky, BOEMRE*

2:05-2:20 **Navy Baseline Studies** – *Robin Fitch, U.S. Navy*

2:20-3:00 **Facilitated Q & A session** – How these data may be incorporated in environmental analyses, which data gaps exist, and which data gaps can be closed soon.

3:00-3:15 Break

3:15-5:15 Acoustic Monitoring Technology and Impacts
Session Objective: To identify which monitoring methods and technologies are currently being used, both unsuccessfully and successfully, on various species, locations, and seasons. And what impacts have been identified

- **Moderator** – *Dr. Michael Rasser, BOEMRE*

3:00-3:15 **OSC Acoustic Monitoring** – *David Zeddies, JASCO*

3:15-3:30 **Monitoring Technologies and Acoustics PNNL** – *Tom Carlson, PNNL*

3:45-4:00 **Acoustic Monitoring, Impacts and Sound Characterization** – *Peter Dugan, Cornell*

4:00-4:15 **Electromagnetic Fields** – *Ann Pembroke, Normandeau Associates*

4:15-4:45 **NMFS Large Whales and Acoustics** – *Dr. Sofie Van Parijs*

4:45-5:15 **Facilitated Q & A session** – How these data may be incorporated in environmental analyses, which data gaps exist, and which data gaps can be closed soon.

5:15–5:30 Day two summary and direction for day three

Technology Assessment and Resource (TA&R) Program:
Renewable Energy Studies
Breakout Sessions Day One (July 12, 2011)

1:00-5:00 **ROCKBRIDGE ROOM**

Day One facilitator for all TA&R sessions will be Dan White, Continental Shelf Associates, Inc.

Moderator: Lori Medley, BOEMRE

1:00-1:30	**Overview of TA&R Program and Summary Review of Renewable Energy Studies Conducted to Date** – *Lori Medley, BOEMRE*
1:30-2:00	TA&R 634 "**Mitigation of Underwater Pile Driving Noise During Offshore Construction**" and TA&R 651 "**Evaluate the Effect of Turbine Period of Vibration Requirements on Structural Design Parameters**" – *Dwight Davis, Applied Physical Sciences Corp.*
2:00-2:45	TA&R 633 "**Wind Farm/Turbine Accidents and the Applicability to Risks to Personnel and Property on the OCS, and Design Standards to Ensure Structural Safety/Reliability/Survivability of Offshore Wind Farms on the OCS**" and TA&R 671 "**Offshore Electrical Cable Burial for Wind Farms: State of the Art; Standards and Guidance; Acceptable Burial Depths and Separation Distances; and Sand Wave Effects**" – *Dr. Malcolm Sharples, Offshore Risk and Technology Consulting Inc.*

2:45-3:00 **Break**

3:00-3:25	TA&R 656 "**Seabed Scour Considerations**" – *Tom McNeilan, Fugro Atlantic*
3:25-3:50	TA&R 627 "**Assess/Develop Inspection Methodologies for Offshore Wind Turbine Facilities**" and TA&R 650 "**Offshore Wind Turbine Inspection Refinements**" – *Robert Sheppard, Energo Engineering*
3:50-4:15	TA&R 669 "**Floating Wind Turbines**" and TA&R 670 "**Design Standards for Offshore Wind Farms**" – *Qing Yu, American Bureau of Shipping*
4:15-4:30	TA&R 672 "**Development of an Integrated Extreme Wind, Wave, Current, and Water Level Climatology to Support Standards-Based Design of Offshore Wind Projects**" – *George Hagerman, Virginia Tech Advanced Research Institute*
4:30-4:40	**IEC TC 88 status update** – *James Manwell, Univ. of Mass.*
4:40-4:50	**TRB "Structural Integrity of Offshore Wind Turbines" report** – *Walt Musial, NREL*

4:50-5:00 **Closing remarks and instructions for tomorrow's sessions**

Technology Assessment and Resource (TA&R) Program:
Renewable Energy Studies
Breakout Sessions Day Two (July 13, 2011)

8:00-9:00 **CIRRUS FOYER A** **Registration and continental breakfast**

9:00-5:15 **ROCKBRIDGE ROOM**

Day Two facilitator for all TA&R sessions will be Dan White, Continental Shelf Associates, Inc.

Moderator: Lori Medley, BOEMRE

9:00-9:30	**Open Mic** – An opportunity for participants to present any other relevant efforts that have been recently completed, or that are on-going that may have an impact on TA&R research efforts.
9:30-9:50	**"Proven Technology" in New Operating Environments** – Several differences in the operating environment of the Atlantic seaboard, and the areas where offshore wind turbines currently are sited have been identified, e.g. hurricanes and open-ocean breaking waves. What other issues present unique concerns for the US OCS? What can we adapt from oil and gas experience?
9:50-10:10	**Marine Hydrokinetic (MHK) Devices (with special emphasis on current devices in the Gulf Stream)** – FERC will be the regulatory agency for construction and operations of some MHK devices on BOEMRE leases, but if the device is not grid connected, BOEMRE will regulate its construction and operations. Design standards have not been developed for these devices. What are the key operational safety/protection of the environment concerns? Are API standards, such as those for the design of mooring systems, appropriate for this industry?
10:10-10:30	**Design and Safety Standards Gaps** – Several preliminary studies and on-going standards maintenance efforts have been initiated. What gaps have been identified? Are they appropriate for consideration for research under the TA&R program funding?

10:30-10:45 **Break**

10:45-11:05	**Regulating Worker Safety** – The risks to offshore oil and gas workers and terrestrial wind farm workers will be discussed with the goal of determining the key issues of regulating worker safety on the US OCS.
11:05-11:25	**Working with Intellectual Property in Technology and Safety Assessments** – Recent documents submitted to BOEMRE have revealed that offshore wind turbines may contain substances that present hazards that are not obvious, e.g. ethylene glycol contained in a dampering system. What other unknown hazards are there? How do we work around IP issues?
11:25-12:00	**Participants' Concerns** – Participants will be encouraged to introduce additional topics.

12:00-1:00 **Lunch – bag lunch provided**

1:00-4:00	**Development of potential research topics** – Based on topics identified in the morning session, those deemed most appropriate for potential funding under the TA&R program will be further defined. Most critical topics will be identified and research requirements including data sources and other challenges will be discussed.

4:00-5:00 **Wrap Up**

Social-Economic Breakout:
Assessment Driven Issues
Breakout Sessions Day One (July 12, 2011)

1:00-5:30 **LAYTON ROOM**

Day One facilitator for socioeconomic session will be David Blaha, ERM

3:15-3:35	**Discussion on the Assessment Driven Focus of This Workshop (Environmental Assessments/NEPA)**
3:35-5:30	**Cultural and Historic Resources**

Session Topics: Historic/Cultural resources, tribal issues, archaeological resources, submerged cultural sites and landscapes.

- **Moderator** – *Brian Jordan, BOEMRE*
- **Fathom Research, LLC** – *Mr. David Robinson*
- **Wampanoag Tribe of Gay Head** – *Ms. Bettina Washington*
- **Narragansett Indian Tribe** – *Mr. Doug Harris*
- **BOEMRE** – *Mr. David Ball*
- **Sea Education Association** – *Dr. John Jensen*

Conclusion for Day 1

Social-Economic Breakout:
Assessment Driven Issues
Breakout Sessions Day Two (July 13, 2011)

8:00-9:00 **CIRRUS FOYER A** **Registration and Continental Breakfast**

9:00-5:40 **CIRRUS CD ROOM**

Day Two facilitator for all socioeconomic sessions will be David Blaha, ERM

9:00-9:10 **Recap: Assessment Driven Focus of This Workshop**

9:10-11:10 **Multi-Use Issues/Space-Use Conflicts**

Session Topics: OCS renewable energy and space-use conflicts and related mitigation, recreational fishing, commercial fishing, DOD, shipping, human geography/ spatial analysis.

- **Moderator** – *John Primo, BOEMRE*
- **Independent Contractor and University of Maryland, Adjunct Faculty** – *Dr. Susan Abbott-Jamieson*
- **University of Delaware** – *Dr. Jeremy Firestone*
- **Woods Hole Oceanographic Institute** – *Dr. Porter Hoagland*
- **Rutgers University** – *Dr. Kevin St. Martin*

11:10-12:10 **Lunch – bag lunches provided**

12:10-2:10 **Public Perception, Legal Studies, Visual Impacts, Tourism**

Session Topics: Marine policy, impact on tourism, public perception, legal issues, visual Impacts on historic properties.

- **Moderator** – *Amardeep Dhanju, BOEMRE*
- **University of Delaware** – *Dr. Jeremy Firestone*
- **Wampanoag Tribe of Gay Head** – *Ms. Bettina Washington*
- **Lawrence Berkeley National Laboratory** – *Mr. Ben Hoen*
- **Clean Power Now** – *Ms. Barbara Hill*

2:10-2:40 **Break**

2:40-4:40 **Economic Impact, Regulatory, Policy, Stakeholder Issues and Infrastructure**

Session Topics: Land-based resources (jobs, facilities, infrastructure), property values, navigational access and safety, staging areas, ports and harbors, vessels, grid infrastructure.

- **Moderator** – *Gary Norton, DOE*
- **Virginia Polytechnic Institute & State University** – *Mr. Matt Unger*
- **Eastern Research Group, Inc.** – *Dr. Maureen Kaplan*
- **Woods Hole Oceanographic Institute** – *Dr. Porter Hoagland*

4:40-5:40 **Create Social Science Report – Facilitator/Support Staff, Panel Members, Moderators, and BOEMRE/DOE Personnel**

Birds, Bats and Offshore Wind Development:
Remaining Information Gaps
Breakout Sessions Day Two (July 13, 2011)

8:00-9:00 **CIRRUS FOYER A** **Registration and Continental Breakfast**

9:00-4:00 **LAYTON Room**

Day Two facilitator for all birds and bats sessions will be Julia Tims, ERM

9:00-12:00 **Birds, Bats and Offshore Wind Development: Remaining Information Gaps**

Session Objective: To present information on immediate information needs and on current and planned research efforts. Following the presentations, there will be a facilitated discussion aimed at identifying and prioritizing the remaining information gaps.

- **Moderator** – *Dr. James Woehr, BOEMRE*

9:00-9:15 **BOEMRE Immediate Information Needs** – *Dr. David Bigger, BOEMRE*

9:15-9:45 **"Marine Bird and Offshore Wind Workshop- Summary"** – *Melanie Steinkamp, FWS*

9:45-11:00 **Current research efforts & expected startups** – **Panel**

Dr. James Woehr, BOEMRE

Dr. Caleb Gordon, Normandeau

Dr. Allan O'Connell, USGS

Dr. Richard Veit, CSI/CUNY

11:00-11:15 **Break**

11:15-12:00 **Ongoing Offshore Bat Studies in the Gulf of Maine,** *Steve Pelletier, CWB Stantec*

12:00-1:00 **Lunch – bag lunch provided**

1:00-2:30 **List of research needs – Report from FWS workshop & Bat Studies**– *Melanie Steinkamp, FWS & David Bigger, BOEMRE*

2:30-2:45 **Break**

2:45-4:15 **Prioritize research needs – Follow up from FWS workshop & Bat Studies** – *Melanie Steinkamp, FWS & David Bigger, BOEMRE*

4:15-5:00 **Create Bird & Bat Research prioritized research needs report**

Workshop Breakout Overview Data Gaps and Partnerships
Day Three (July 14, 2011)

8:00-9:00	**CIRRUS FOYER A**	**Registration and continental breakfast**
9:00-12:15	**CIRRUS BALLROOM**	**Breakout groups present overview of findings, identify priority data gaps and overlaps and indentify partnerships and collaboration**
9:00-9:30	**Environmental: Monitoring and Baseline Studies**	
9:30-10:00	**Social – Economics**	
10:00-10:15	**Break**	
10:15-10:45	**Birds & Bats**	
10:45-11:15	**TA&R**	
11:15-12:15	**Open Discussion & Public Comment**	
12:15-1:15	**Lunch – on your own**	
1:15-4:00	**Development of future study topics with Federal Partners or Collaborators**	

SPEAKER/PRESENTER BIOSKETCHES
Listed by Session and Presentation Order

PLENARY SESSION

Director Bromwich

Michael R. Bromwich is the Director of the Bureau of Ocean Energy Management, Regulation and Enforcement and has served in that position since June 21, 2010. He was asked by President Obama and Interior Secretary Ken Salazar to lead reforms that will strengthen oversight and regulation of offshore oil and gas development and oversee the fundamental restructuring of the former Minerals Management Service, which was responsible for overseeing oil and gas development on the Outer Continental Shelf.

Maureen Bornholdt

Bureau of Ocean Energy Management, Regulation and Enforcement
Program Manager, Office of Offshore Alternative Energy Programs
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Christopher G. Hart

Offshore Wind Manager
U.S. Department of Energy Wind and Hydropower Technologies

Dr. Christopher G. Hart graduated from the United States Naval Academy with a degree in Naval Architecture, Ocean, and Marine Engineering and immediately accepted a commission as a Special Operations Officer in the US Navy. After ten years of Active Duty, during which he saw combat deployments in Operations Iraqi and Enduring Freedom, Dr. Hart began his graduate school studies at the University of Michigan. In the ensuing 44 months, Dr. Hart earned a PhD and MSE in Naval Architecture and Marine Engineering, along with an MBA. Dr Hart has served as the Offshore Wind Manager at the United States Department of Energy (DOE) since June, 2010. During his tenure at DOE he has worked to create an offshore wind energy industry in the United States by building a team of innovative, committed civil servants and contractors, authoring the National Offshore Wind Strategy, and allocating nearly $80M of program funds.

Maureen Kaplan

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Dr. Kaplan is a Vice President in Eastern Research Group's in the Economics and Regulatory Analysis section. For the past six years, she has supported BOEMRE in socioeconomic analyses for energy operations in OCS regions. She managed the analysis and identification of infrastructure components relative to offshore wind, wave, and ocean energy projects in Atlantic and Pacific OCS regions; examined infrastructure supporting offshore oil and gas operations in the Gulf of Mexico; developed a Gulf-wide methodology for estimating the jobs and revenues associated with coastal travel, tourism, and recreation; prepared an in-depth analysis of the jobs in the offshore oil services industry and a geographic distribution of those jobs, and other projects. She looks forward to participating in this exciting collaboration.

Joel Whitman

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Mr. Whitman is CEO of Global Marine Energy, Inc. an American-owned company recently founded as part of the strategic expansion for GMSL, to address the growing demand for offshore power cable installation expertise in North America. He also serves as the Director Corporate Strategy, Marketing and Communications for Global Marine Systems Limited, the world's largest independent provider of submarine cable installation and related engineering services, and a pioneer in the field of subsea cabling since the mid-1800's. Mr. Whitman joined Global Marine in 2005 and has worked alongside his colleagues to solidify the company position in its core markets, such as Telecommunications and to diversify the business into new and emerging markets.

Timothy Konnert

Federal Energy Regulatory Commission**,** Office of Energy Projects
Fish Biologist
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Tim Konnert is a fish biologist who has worked in the Federal Energy Regulatory Commission's Division of Hydropower Licensing for almost 9 years. For the last 5 years he has played an integral role on the Commission's Marine and Hydrokinetic Energy Team in alleviating some of the regulatory barriers for the hydrokinetic industry, including the development of the hydrokinetic pilot project licensing procedures. Tim is currently the Commission's project coordinator for three of the four active hydrokinetic pilot project licensing proceedings on the U.S. east coast.

David Cottingham

Senior Advisor to the Director
Fish and Wildlife Service
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Walter Barnhardt

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Dr. Walter Barnhardt is a marine geologist working on basic scientific problems that have societal and management implications. His research focuses on the geology of continental shelf and coastal environments, and understanding the processes that control sediment transport and vulnerability to change. Since 1988, he has led numerous seafloor mapping surveys along the US East and West Coasts and in the Hawaiian islands. Currently he is the Director of the USGS Woods Hole Science Center in Woods Hole, MA. He supervises approximately 100 marine scientists, technologists, and support staff who explore and study many aspects of the underwater areas between shorelines and the deep ocean as part of the USGS Coastal and Marine Geology Program.

Sarah A. Quinn, J.D.

National Park Service
External Renewable Energy Specialist
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Sarah A. Quinn is the External Renewable Energy Specialist for the National Park Service (NPS) Washington Office. She is tasked with providing policy support to the parks, regional offices, and directorate and with helping coordinate with agency partners to facilitate smart siting and design. Previously, Sarah worked for the Bureau of Land Management California State Office where she was a renewable energy program and environmental coordinator. She was also detailed at the Regional Solicitor's Office to resolve legal questions related to processing renewable energy applications. Sarah joined federal service as a Presidential Management Fellow. In addition to her renewable energy background, she is an attorney and member of the Colorado Bar.

Emily Lindow

Senior Policy Advisor to the Assistant Administrator
NOAA - NMFS
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Emily Lindow is the Senior Policy Advisor to the Assistant Administrator at NOAA Fisheries Service (NMFS). She has the lead for the NMFS energy policy portfolio, which includes offshore oil and gas, liquefied natural gas, conventional hydropower, offshore wind, marine hydrokinetic energy, and coastal nuclear energy. Emily has substantial energy and environmental policy experience, having served as the Senior Policy Advisor to the Secretary of Commerce and the NOAA Under Secretary, as well as working for the Senate Commerce Committee. She recently served as a Senior Analyst for environmental, regulatory, and Arctic issues at the National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling. Emily has Master of Environmental Management degree from Duke University and a Master of Arts degree in International Relations from Johns Hopkins School for Advanced International Studies.

John H. Page Jr.

Federal Aviation Administration
Supervisor, Wind Turbine Evaluations
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John Page, Supervisor for wind turbine evaluations at the Federal Aviation Administration Headquarters, Obstruction Evaluation Group, is responsible for the oversight of wind turbine evaluations and their impact on the National Airspace System, as well as the development of policies and procedures related to evaluation of wind turbines. Prior to beginning his work in the Obstruction Evaluation Group John served as the Lead, Air Traffic Specialist for Unmanned Aircraft Systems (UAS) NextGen and Futures Integration and as a subject matter expert in the FAA's Air Traffic Organization UAS Group.

Prior to coming to work for the FAA John served in the United States Army as an Air Traffic Controller (ATC). He held positions of varying levels of responsibility including ATC Facility Manager, Squadron Logistics Officer, Installation Operations Officer, ATC Human Resource Manager, and Department of the Army Regional Representative Noncommissioned Officer to the FAA Western-Pacific Region. John Retired from the Army in February 2007 with 22 years of service.

He has a Bachelor of Applied Science Degree in Technology and Resource Management from Troy University and is currently pursuing his Master of Aeronautical Science Degree in Aeronautical Management from Embry-Riddle Aeronautical University. He is a graduate of the FAA's Program for Emerging Leaders, a member of the Sergeant Audie Murphy Leadership Club, and a recipient of the Army Aviation Association Order of Saint Michael Award for outstanding service to the aviation community. He is married to the former Rena Messer of Kerrville, Texas they have two children and reside in Stafford, Virginia.

James Haggerty

U.S. Army Corps of Engineers
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Mr. George H. Detweiler, Jr., retired from the U. S. Coast Guard with over 20 years service. He returned to the Coast Guard as a marine transportation specialist in the Marine Transportation Systems Management Directorate at USCG Headquarters. His major projects have included conducting port access route studies, creating ships' routing measures, conducting tribal consultations, and reviewing offshore renewable energy installations (OREIs) proposals. Mr. Detweiler has worked on the Cape Wind project and has been a panelist at the recently completed EnergyOcean International Conference and Exhibition in Portland, Maine, and the last AWEA conference in Atlantic City, NJ.

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Susan has been employed by the U.S. EPA since 1980 in various positions involving many aspects of domestic and international environmental protection. She is currently the Director of the Office of Federal Activities (OFA) at EPA headquarters in Washington, DC, responsible for EPA's activities implementing the National Environmental Policy Act and for EPA's international enforcement capacity building programs. Prior to moving to OFA in March 2008, Susan directed the waste remediation enforcement office, establishing policy for compelling private parties to clean up old and abandoned toxic waste sites under the billion dollar Superfund program and the RCRA corrective action program. She also led efforts to implement the liability reforms contained in the Small Business Liability Relief and Brownfields law. Previous to working in the Office of Site Remediation Enforcement, Susan directed the RCRA enforcement program, establishing national policy on waste enforcement, penalties and site clean-up. From 1980 to 1988, Susan held a variety of positions with responsibility for developing hazardous waste regulations and setting hazardous waste facility permitting policies. Susan is an attorney and a graduate of Georgetown University Law Center. Her undergraduate degree is from the State University of New York at Albany. She is a member of the District of Columbia bar and the American Law Institute.

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Dr. Thomas McCulloch is Senior Program Analyst and Senior Archaeologist with the Advisory Council on Historic Preservation's Office of Federal Agency Programs. He has been with the Council about 24 years. Tom's primary focus is working with Federal agencies with strong archaeological, land-managing, and scientific responsibilities to ensure effective compliance with the National Historic Preservation Act. He has responsibilities for the Army Corps of Engineers (non-regulatory), the Department of Energy, NASA, NOAA, BOEMRE, and the Bureau of Reclamation. He is the staff liaison with the ACHP's Archaeology Task Force and Subcommittee, which has recently revised the ACHP's human remains policy, developed a new archaeology and heritage tourism policy statement, and developed new interactive archaeology guidance on the ACHP's website. Tom also regularly teaches the ACHP's introductory and advanced training courses.

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Dr. Boatman is an oceanographer in the Environmental Sciences Branch of the Environmental Division in Herndon, Virginia. She is currently on a two year detail to the National Ocean Council as an Ocean Policy Advisor.

She is working on the implementation of the National Ocean Policy established by President Obama in July, 2010. She has a Ph.D. in Chemical Oceanography from Texas A&M University.

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Mr. Madsen has six years of professional geospatial consulting services experience with AMEC Environment & Infrastructure and holds a M.S. in Planning and Land Management from Aalborg University, Denmark. He currently serves as the GeoSpatial Services Group Manager and is a member of the Information Management Department. His experience covers a wide range of geospatial service related functions including database development, GIS analysis, map production, raster creation and analysis, GIS implementations and application development support. He has provided technical and management assistance as well as on-site training to West Virginia University GIS Technical Center. Prior to current focus on the ESID project Keld Madsen was the project manager for FEMA Map Modernization in the State of Kentucky overseeing an engineering/GIS team on multi-year, multi-county map modernization (DFIRM) projects. He has been responsible for project deliverables, schedules, QA/QC, H&H analyses oversight, development and production of DFIRM panels, DFIRM databases, and Flood Insurance Studies.

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Mr. Caldow is Chief of NOAA's Biogeography Branch, based in Silver Spring, Maryland. The Branch specializes in integrating and synthesizing spatial information into decision tools for managers of marine and estuarine ecosystems. Mr. Caldow is a Marine Biologist by training, with a strong research interest in the application of biogeographic principles to broad management issues such as Coastal and Marine Spatial Planning. His educational background includes an M.S. in Biology from the University of Houston, and B.S. in Aquatic Biology at the University of California, Santa Barbara. Mr. Caldow came to NOAA as a Knauss Marine Policy Fellow in 2000, and has been with the Biogeography Branch since then. The Biogeography Branch is part of the Center for Coastal Monitoring and Assessment (CCMA), one of NOS' National Centers for Coastal Ocean Science (NCCOS).

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Dr. Brian Calder is a Research Associate Professor at, and Associate Director of, the Center for Coastal and Ocean Mapping and NOAA-UNH Joint Hydrographic Center (CCOM/JHC) at the University of New Hampshire. He graduated M.Eng (with Merit) and Ph.D in Electrical & Electronic Engineering from Heriot-Watt University in Edinburgh, Scotland in 1994 and 1997 respectively, but became an accidental hydrographer after joining CCOM/JHC in 2000. His research interests have primarily revolved around application of appropriate statistical techniques to remotely sensed data, and currently focus on the application of statistical models to the problem of hydrographic data processing; ocean mapping; and associated technologies.

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Mr. Weiss, a Senior Associate at IEc, has nearly 20 years of experience as a consultant to public agencies and private entities. His work spans a range of environmental and energy-related issues, from the assessment of costs and benefits of offshore renewable energy, to the development of a model for assessing the environmental and social costs attributable to offshore oil and gas development, to the analysis of the efficacy of a state tax credit as a catalyst for investment in renewable energy and energy conservation projects. Mr. Weiss re-joined IEc in 2005, having previously worked at the firm from 1994-2000. From 2001-2004, he was an Associate Director at Cambridge Energy Research Associates (CERA) where he developed and communicated strategic insights to a global energy industry clientele, with a focus on emerging technologies and the potential impacts of emerging public policies. Mr. Weiss is a graduate of Brown University and the Massachusetts Institute of Technology.

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Laura has been with the Virginia Coastal Zone Management Program since 1988 and has served as its Program Manager since 1994. The Virginia CZM Program is a network of state natural resource agencies and coastal city and county governments that implement Virginia's laws and policies to protect and restore coastal ecosystems and economies. As Program Manager Laura initiated multiple-year land acquisition, habitat restoration and ecotourism projects as well as several Special Area Management Plans (SAMPs). She serves on the Management Board of the Mid-Atlantic Regional Council on the Ocean (MARCO) and as the Leader of its Coastal and Marine Spatial Planning Action Team. In that capacity she initiated the development of MARCO's Mapping and Planning Portal in fall 2009. Laura has a Bachelor's degree in Environmental Studies from Smith College and a Master's of Public Administration from the Rockefeller School of Public Affairs at the State University of New York at Albany.

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As Director of Marine Planning Programs for the Massachusetts Ocean Partnership, Nick leads MOP's programs to advance science based and stakeholder informed ocean planning. In this capacity, he manages over a dozen projects including the development of statewide and regional data and information networks, the characterization of key ocean uses and industries, the development of models and other analysis and software tools to support decision making, and the development of environmental and socioeconomic indicators to measure progress.

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Mr. Weber has 13 years of experience in the environmental field, focusing on coastal and ocean management issues. He is currently the CMSP Managing Director for the Northeast Regional Ocean Council, a partnership of New England states and federal agencies collaborating on ocean management issues, where he is providing strategic direction for the Northeast response to the National Ocean Policy, particularly the Coastal and Marine Spatial Planning Framework. He recently served as the Ocean Program Manager for the Massachusetts Office of Coastal Zone Management, where he managed the development and implementation of the Massachusetts Ocean Management Plan, completed in late 2009. Mr. Weber's previous private- and public-sector experience included review of urban waterfront development and planning activities, dredging, coastal erosion, and wetland restoration projects. Mr. Weber has a B.S. in Coastal Geology from Long Island University and an M.S. in Marine Resource Management from Oregon State University.

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Christine Taylor has been the Lead Physical Scientist for The Bureau of Ocean Energy, Regulation and Enforcement's (BOEMRE) Mapping and Boundary Branch, and the co-lead on the Multipurpose Marine Cadastre project for a little over 2 years. In addition to her work on the MMC, she focuses on mapping projects related to renewable energy siting and oil and gas lease sale areas and participates in a number of interagency working groups aimed at promoting GIS data and project sharing, including the National Ocean Council's Interagency Information Management System - CMSP Data Portal Working Group
Prior to her employment with BOEMRE Christine served as the GIS Coordinator for NOAA's National Marine Sanctuary Program. She has 20+ years experience working as a GIS professional. She holds a MS in Environmental Science and Planning from Johns Hopkins University and a BS in Geography and Environmental Planning from Towson University.

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Brian Smith is a Coastal Ecologist at the National Oceanic and Atmospheric Administration's Coastal Services Center. His focus is coastal and marine spatial planning implementation in addition to development and application of the Multipurpose Marine Cadastre. An experienced facilitator of collaborative projects, he has 10+ years of experience working with partners to conserve coastal resources.

Prior to his current position he worked as a Research Coordinator for the Great Bay National Estuarine Research Reserve and as a Regional Biologist for Ducks Unlimited. He holds an MS in Fisheries Biology and a dual BS in Environmental and Forest Biology and Resources Management from the State University of New York, College of Environmental Science and Forestry.

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Jim Lanard is President of the Offshore Wind Development Coalition, which was recently formed by seven offshore wind developers and includes the American Wind Energy Association as one of its founding members. The Offshore Wind Development Coalition serves as an advocate for offshore wind developers and their supply chain partners before federal legislative and regulatory bodies.

Prior to his current position, Lanard was Managing Director of Deepwater Wind, where he was involved in the company's offshore wind development initiatives in Rhode Island, New Jersey, New York and Massachusetts and supported the company's strategic planning, policy development and regulatory affairs efforts. He also worked at Bluewater Wind for several years, leading Bluewater's strategic planning and advocacy initiatives.

Jim has worked in the environmental and energy sectors for his entire career. He has been executive director of two non-governmental environmental groups, Chief of Staff to a Member of the U.S. House of Representatives, Director of Environmental Programs and Government Relations for The Walt Disney Company's Disney's America project, and partner in an energy and environmental consulting firm. Jim is a member of the New Jersey, Pennsylvania and Florida Bars and is also a former adjunct assistant professor at Rutgers University and Drexel University.

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Ms. Kenney is the Director of Permitting at Deepwater Wind, a leading offshore wind developer. She is responsible for overseeing the permitting of Deepwater Wind's portfolio which includes projects off the coast of Rhode Island, New Jersey, New York and Massachusetts. Ms. Kenney has worked on the permitting of wind and other energy projects in the United States and abroad for over 11 years. Prior to joining Deepwater Wind, she was the National Director of Wind Energy at Tetra Tech EC, Inc. During her time with Tetra Tech, their wind energy program was responsible for permitting over 335 projects representing over 20,000 MW of installed capacity. She co-managed preparation of the Wind Energy Siting Handbook for the American Wind Energy Association, published in 2008. Ms. Kenney received her B.A. and M.A. in Environmental Science & Policy from Clark University.

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Ms. Jodziewicz (jaws-a-wits) is Director of Permitting at NRG Bluewater Wind. She has been in the renewable energy industry since 1998, most recently at the American Wind Energy Association (AWEA). For six years at AWEA she managed project siting, wildlife, and offshore wind policy issues before industry organizations, government agencies, environmental groups and the media. Prior to her involvement with wind she gained experience in a number of energy organizations spanning the solar, distributed generation and natural gas industries.

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Kris Ohleth is the Director of Permitting for the Atlantic Wind Connection backbone transmission project. Her past positions include Policy Manager for Coastal and Marine Spatial Planning issues for Ocean Conservancy and the Director of Environmental Affairs for both Deepwater Wind and Bluewater Wind. Kris worked as a research technician and editor for the National Marine Fisheries Service in Woods Hole, MA and as a communication coordinator for The Nature Conservancy. She earned an undergraduate degree from Rutgers University and a master's degree from the University of Rhode Island in Coastal and Ocean Policy. She is on the Board of the US Offshore Wind Collaborative, the New Jersey Environmental Lobby, and is the Chair of the New York/New Jersey Chair of the Women of Wind Energy.

ENVIRONMENTAL BREAKOUT:
MONITORING AND BASELINE STUDIES

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Jennifer Ewald has been working in the field of Marine Science for 15 years, as a Project Manager she is operationally experienced deploying over 200 oceanographic moorings in coastal Atlantic, Pacific and Alaska waters for NOAA, the Prince William Sound Science Center and State of Alaska specializing in current measurements and acoustics. Her passion for evaluating technology to improve methods of data collection, quality analysis and assessing user needs to most effectively produce accurate and relative results to the public, resource managers, emergency responders, researchers and policy makers lead to her recognition by the Department of Commerce with a Bronze Medal Award for the modernization of the National Current Observation Program (NOAA) in 2008. She received a degree in Marine Science from Coastal Carolina University in 1999 and delivered a Masters Thesis on coastal circulation in Narragansett Bay at the University of Rhode Island in 2001. Jennifer joined the Environmental Studies Program in May 2010, focusing on the coordination of renewable energy research within the agency and with external partnerships.

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Mr. Balcom is a Senior Scientist in CSA International, Inc.'s (CSA's) Western Regional Office located in Salinas (Monterey County), California. He is a benthic ecologist with nearly 30 years of experience in biological baseline studies and assessments of the potential effects of man's activities on the marine environment. With CSA since 1981, Mr. Balcom has provided marine biological technical expertise, environmental impact assessment (EIA) capabilities, and management oversight on numerous multidisciplinary assessments of proposed activities in federal and state waters (e.g., oil and gas exploration, development and abandonment activities, and liquefied natural gas [LNG] terminal and pipeline installation and operation). He has managed EIAs for compliance with the National Environmental Protection Act (NEPA) and Council on Environmental Quality (CEQ), and protective regulations including the Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), and California Environmental Quality Act (CEQA). Mr. Balcom has prepared assessments related to noise effects on marine mammals and sea turtles, with an emphasis on endangered and threatened species.

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Dr. Buchanan was project manager for the Ocean/Wind Power Ecological Baseline Studies, a two year study of avian, marine mammal and sea turtle species in the offshore waters of New Jersey. He is the Manager of the Office of Science for the New Jersey Department of Environmental Protection (NJDEP), oversees multidisciplinary research and science-based technical support, and is responsible for the coordination and administration of the NJDEP Science Advisory Board. He has degrees in biology and environmental science with a focus on aquatic ecology, marine/estuarine ecology, and ecotoxicology. With more than 28 years of experience, he has conducted a variety of field, laboratory and research projects involving water quality, natural resources, ecology, ecotoxicology, environmental toxicology, ecological risk assessment, and hazardous waste site investigations. He has managed technical groups which have conducted numerous ecological and environmental investigations at sites across the United States.

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Bill White serves as the Assistant Secretary for Federal Affairs in Governor Patrick's Energy and Environmental Affairs Office in Massachusetts. In this role, Bill leads the state's efforts on the federal leasing process for offshore wind development. He has played a key role in securing federal permits for the historic Cape Wind project and attaining federal funding for the Massachusetts Wind Technology Testing Center, the largest wind blade test facility in the world. Previously, Bill worked at the Harvard Kennedy School where he directed the John F. Kennedy Jr. Forum. During the 90s, Bill served as a Special Assistant to the President in the Clinton White House and worked at the U.S. Department of State. During the Gulf War, Bill helped organize the international media center in post-liberated Kuwait. He is a graduate of Boston College (B.S.) and Harvard Kennedy School (MPA). Bill lives with his wife and two kids in his hometown of Milton, MA.

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In his capacity as a planner at the Maine Coastal Program, Matt's duties involve spatial analysis, data collection and collection effort coordination, coastal public access policy development, and coastal and marine spatial planning policy development and implementation. He was involved in the state's efforts to site three ocean energy test areas in Maine state waters and is currently coordinating the data and spatial analysis piece for Maine's next evolution of CMSP. Prior to his work in Maine, Matt worked for the U.S. EPA, Atlantic Ecology Division where he focused on database structure and maintenance, spatial analysis, and water quality analysis. Matt has a Master's degree in Coastal and Marine Policy and Law from the University of Rhode Island.

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Mr. Fugate is Executive Director of the Rhode Island Coastal Resources Management Council (CRMC). In his role over a 25 year period, Fugate has been responsible for overseeing the development of all policies and programs for the state's coastal program. Currently, he is serving as project manager of the Rhode Island Ocean Special Area Management Plan (SAMP), the CRMC's seventh such regulatory program. The SAMP will provide management of a variety of existing and new uses in state ocean waters and focuses in part on providing guidance for the development of offshore renewable energy resources. Due to his leadership with the model Ocean SAMP project, Fugate has earned many significant awards, including the prestigious Susan Snow-Cotter Award for Excellence in Ocean and Coastal Resource Management from the National Oceanic and Atmospheric Administration (NOAA). He has also been presented with several Sea Grant Awards including, the 2008 Sea Grant Life Time Achievement Award for coastal management. Fugate is the author of a number of academic journal articles on coastal and natural resources management issues and is a adjunct faculty member at the Marine Affairs Program at the University of Rhode Island and also a guest lecturer at Brown University and Roger Williams University

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Ms. Carnevale is a Coastal Manager at the University of Rhode Island's Coastal Resources Center. She currently conducts research and outreach on offshore renewable energy development in support of the National Oceanographic Partnership Program (NOPP) Project "Developing Environmental Protocols and Modeling Tools to Support Ocean Renewable Energy and Stewardship" (Project Number: M10PS00152) and the Ocean Special Area Management Plan (SAMP), an ecosystem-based marine spatial planning project. Specifically, her research has examined offshore renewable resources, technology, and the environmental effects of its development. In addition, Ms. Carnevale has been heavily involved in the creation of a regulatory framework for offshore renewable energy to be used at the state level in Rhode Island. Ms. Carnevale joined the Coastal Resources Center in 2009, after receiving a Master's degree in Marine Affairs and a Master's in Business Administration from the University of Rhode Island, where her graduate research focused on offshore renewable energy development in New England. She also holds a B.S. in Marine Ecology from Cornell University.

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John King's current research interests include geomagnetism and paleomagnetism, environmental magnetism, sedimentology, paleoclimatic studies,sediment core logging, coastal and marine habitat and ecosystem studies, trace metal geochemistry, pollution studies. John King teaches a graduate course in Environmental Magnetism and High-Resolution Quaternary Climate Studies, as well as graduate courses in Geological Oceanography and Introduction to Marine Pollution. Dr. King has given numerous talks and presentations to the general public on global and local impacts of climate change. Dr. King received his Ph.D. in geology from the University of Minnesota.

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Michelle works in the Office of Protected Resources and is the point of contact for all renewable energy activities that may require an incidental take authorization under the Marine Mammal Protection Act. She received a Master of Environmental Management from Duke University.

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Julie Slacum has been a Fish and Wildlife Biologist with the U.S. Fish and Wildlife Service, Chesapeake Bay Field Office since 1999. For the first ten years of her career she worked for the Coastal Program on habitat restoration projects for endangered species and migratory birds. Most of this work involved invasive species control. She worked on multiple invasive species policy issues, the largest and most controversial one being the proposed introduction of a non-native oyster to the Chesapeake Bay. She also coordinated an eight state regional panel on aquatic invasive species for several years. In 2009, she became the Endangered Species and Conservation Planning Division Chief. In that position, she supervises eleven employees that evaluate and review project related impacts on Service trust resources (threatened and endangered species, migratory birds, interjurisdictional fisheries, refuges) under the Endangered Species Act, Fish and Wildlife Coordination Act, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and Sikes Act. Before she started employment with the Service, she received a dual B.S. Degree in Biology and Environmental Science from Salisbury State University and University of Maryland Eastern Shore. She then went to receive a M.S. in Fisheries through the University of Maryland Marine, Estuarine, and Environmental Sciences program.

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Ms. Skrupky is a Marine Biologist for BOEMRE. She has nine years of experience, specializing in acoustic effects on marine mammals, sea turtles, and fish. Ms. Skrupky writes and reviews environmental analyses to comply with the National Environmental Policy Act, Marine Mammal Protection Act, and Endangered Species Act and participates in the environmental studies program as BOEMRE sponsors research on marine mammals, sea turtles, and fish.

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Dr. Hoff, Senior Ecologist, has worked for the Mid-Atlantic Fishery Management Council for nearly 30 years. He has been responsible for or worked on each of the Council's Fishery Management Plans and has been the lead for habitat and ecosystem efforts. Prior to working for the Council he spent six years with two environmental consulting firms working on the Hudson River. He has a B.S. (Zoology) and M.S. (Ecology) from The Pennsylvania State University and a Ph.D. (Marine Sciences) from the University of Delaware.

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Dr. Sofie Van Parijs has worked on passive acoustic research from the poles to the Tropics for over 17 years. She has undergraduate and masters degrees from Cambridge University, U.K. and a Ph.D. from Aberdeen University, UK. She worked as a postdoctoral scientist at the Norwegian Polar Institute, James Cook University in Australia and Cornell University before moving to the Northeast Fisheries Science Center (NMFS/NOAA) in 2004. At NMFS she is the program leader for large whale and passive acoustic research within the Protected Species Branch. She has published over 40 papers in international journals and represents NMFS in a wide range of fora within the U.S. and internationally. Her expertise in marine bio-acoustics has addressed questions on behavioral ecology, distribution, abundance, long term monitoring, mitigation and effects of ocean noise on marine mammals. This has given her extensive experience collecting data with archival, real time acoustic recorders and autonomous vehicles.

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Robin Fitch has worked for the Department of the Navy as the Director of Marine Resources and At Sea Policy since 2006, where her work has focused primarily on policy analysis and science application regarding military activities and environmental sustainability in the marine environment. Ms. Fitch served in the Navy as an unrestricted line officer from 1980 through 2010 in both the active and reserve components. She holds a BS and MS in Biology, an MA in Education, and a PhD (ABD) in Environmental Science and Policy from George Mason University.

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Dr. Zeddies is a Senior Scientist with JASCO Applied Sciences. He has a Ph.D. in Neuroscience from Northwestern University in Evanston, Illinois; and, is also trained as an engineer, with a BSME from the University of Illinois in Champaign-Urbana. Dr. Zeddoes has published refereed articles on auditory neurophysiology, sound source localization by fish, and the impacts of intense sounds on fish hearing. Dr. Zeddies academic and professional work includes methods of acoustic measurement and assessment of risk due to anthropogenic sounds on marine life.

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Mr. Carlson has been active in research of active and passive acoustics for over 30 years. Passive acoustic research includes the effect of impulsive sounds generated by pile driving on fish, detection, classification, and localization of vocalization marine mammals, broad band noise measurement at prospective marine hydrokinetic sites, and instrumentation and software for the acquisition, processing, and analysis of underwater noise. Active acoustic research includes target strength models and measurements for fish and marine mammals and the development of micro-transmitters for acoustic telemetry.

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Dr. Peter J. Dugan is a research scientist with a background in electrical engineering and advanced computing. As a research scientist, Dr. Dugan spent 16 years in industry working for Hughes Aircraft Company and Lockheed Martin. He has authored several US patents and trade secrets plus a host of professional peer-reviewed articles and presentations. His current research includes advanced methods for detection and classification using passive acoustic data and is the Principal Investigator, along with Dr. Christopher Clark, for the ONR Grant for Detection, Classification and Localization, awarded 2011. Dr. Dugan is currently the Director of Applied Science and Engineering at the Cornell Lab of Ornithology, Bioacoustics Research Program where his team works on animal vocalization recording and analysis hardware and software to promote conservation efforts.

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Ms. Bachman has worked as a Fishery Analyst for the New England Fishery Management Council in Newburyport, MA since 2008. NEFMC, which is one of eight regional councils established by the Magnuson Stevens Fishery Conservation and Management Act, manages fishery resources in federal waters off Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. Michelle's focus is on issues related to Essential Fish Habitat, including designation, evaluation of fishery impacts, and development of measures to minimize fishery impacts. In addition, she works on issues related to deep-sea corals and marine spatial planning. She provides staff support for the Council's Habitat, MPA, and Ecosystem Committee, and chairs the Habitat Plan Development Team. Ms. Bachman has an undergraduate degree in Biology and Environmental Studies from Tufts University, and a master's degree in Living Marine Resource Science and Management from the University of Massachusetts Dartmouth.

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Ann Pembroke is Vice President and Technical Director of the Marine Sciences group at Normandeau Associates. With an MS from the University of Delaware in Marine Studies, her career focus has been on impact assessment of marine development. Initially specializing in plankton resources, she has worked her way through the food web and has addressed impacts to benthos, fish, and marine mammals. Her experience spans major port development, dredging, deepwater ports, pipelines, transmission cables, and offshore wind projects.

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Roger Pugliese, Senior Fishery Biologist with the South Atlantic Fishery Management Council has, over 25 years, facilitated development of Fishery Management Plans ranging from South Atlantic Red Drum to Atlantic Dolphin and Wahoo to habitat plans for Coral and Live Bottom Habitat and Pelagic Sargassum. He is responsible for the Council's Spatial GIS, Essential Fish Habitat and broader habitat conservation and ecosystem coordination efforts including the development of the Council's Habitat Plan and the Fishery Ecosystem Plan which supports Comprehensive Ecosystem-Based Management Amendments. To facilitate regional ecosystem coordination, he also serves on the Southeast Coastal and Ocean Observing Regional Association Board of Directors, is a member of the South Atlantic Landscape Conservation Cooperative Steering Committee, Chairs the South Atlantic Committee for the Southeast Area Monitoring and Assessment Program and is a member of the Governor's South Atlantic Alliance Executive Planning Team, the Southeast Aquatic Resources Partnership and the South Atlantic Regional Research Plan Development Team.

SOCIAL ECONOMIC BREAKOUT: ASSESSMENT DRIVEN ISSUES

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Brian Jordan is the federal preservation officer and headquarters archaeologist for the Department of the Interior's Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE). Prior to joining BOEMRE, Brian was the assistant state underwater archaeologist for Maryland, working for the Maryland Historical Trust. In Maryland, he built up the remote-sensing and data processing capabilities of the Maryland Maritime Archaeology Program. Other government experience included building and overseeing the cultural and historical resources component of NOAA's National Marine Protected Areas Center. In his career as a marine archaeologist, Brian has participated in and conducted marine archaeology surveys and excavations in numerous countries on four continents, including Turkey, Denmark, Portugal, and Morocco. He also worked with and advised institutes and government representatives of several countries on the survey, excavation, and management of submerged cultural resources. Past research focused on environmental factors affecting the preservation of wooden shipwrecks in the marine environment.

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David has over 29 years' international Environmental, Social and Health Impact Assessment experience primarily in the energy, mining and metals, military, and transportation sectors. His particular energy experience includes hydropower, windpower, natural gas pipelines and LNG (including onshore and offshore Deepwater Ports). He is an expert on the regulatory/procedural requirement of NEPA, Section 7 of the Endangered Species Act, Section 106 of the Natural Historic Preservation Act and Executive Orders for wetlands, floodplains, and environmental justice in the US. He specializes in assessing/permitting large (often >$1 billion) infrastructure projects.

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Mr. Robinson, M.A., R.P.A., is an underwater archaeological consultant and the director of the New Bedford, Massachusetts-based Fathom Research, LLC's Marine Archaeological Services Division. He has worked in the submerged cultural resource management field since 1991, during which time he has directed archaeological projects throughout New England, the Great Lakes and Lake Champlain, the Mid-Atlantic, the Deep South, and in the Gulf of Mexico. Since 2001, Mr. Robinson has performed multi-disciplinary investigations to assess and identify both historic and prehistoric submerged cultural resources in support of the environmental permitting review for seven different offshore renewable energy projects in the Mid-Atlantic and New England regions. Most recently, he was an invited presenter during a symposium on modeling surviving prehistoric landforms on the Outer Continental Shelf at the BOEMRE's 2011 Information Transfer Meeting, and is a co-author of the 2011 BOEMRE-funded study - *Prehistoric Site Potential and Historic Shipwrecks on the Atlantic Outer Continental Shelf*.

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Dave Ball is the Regional Historic Preservation Officer for the Pacific OCS office of the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE). He also serves as the BOEMRE Diving Safety Officer. Since joining BOEMRE in 1999, Dave has been involved with documenting a number of historic shipwrecks on the Atlantic and Gulf of Mexico Outer Continental Shelf (OCS). He has directed terrestrial and underwater projects throughout the United States and is currently responsible for archaeological and cultural heritage resources on the Pacific OCS. Dave received his Master of Arts degree in Anthropology from Florida State University in 1998 and is an elected member of the Advisory Council on Underwater Archaeology Board of Directors.

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Ben Hoen is a researcher at Lawrence Berkeley National Laboratory, concentrating primarily on the investigation of individual and community responses to a number of different renewable energy sources, such as large scale wind and residential solar. In 2009, Ben completed a multi-year study investigating the effects that nearby wind facilities have on surrounding property values, and since has continued this work as part of a team investigating noise and annoyance issues surrounding existing wind facilities in the US. He is co-authors on a number of LBNL report's and journal articles and is ask to speak frequently on the subject of renewable energy and public acceptance. He holds Bachelors degrees in Finance and General Business, and a Master of Science Degree in Environmental Policy.

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Over the course of the past 30 years Barbara has held a variety of management positions within non-profit organizations focused on renewable energy, land preservation and affordable housing. From 2001 - 2005 she served as the Project Manager for Offshore Wind with the Massachusetts Technology Collaborative, Renewable Energy Trust, the state's development agency for clean energy and the innovation economy. She is a founding initiator of the CLEAN campaign, a collaborative of grassroots led organizations working for a new national energy policy advocating CLEAN's Call to Action. Barbara is also a 2008 Senior Fellow with the Breakthrough Institute and serves on the Board of Directors of the US Offshore Wind Collaborative.

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Gary Norton is Program Manager for Wind and Water Power at Sentech Inc, now part of SRA International. In this capacity, he provides technical and programmatic support for the U.S. Department of Energy's (DOE) Wind Program and was instrumental in developing the agency's strategy for Offshore Wind Energy. Mr. Norton's experience in wind energy dates back to developing the first utility interface turbines and installing the world's first wind farms in California in the early 1980's. In his varied career he has also provided fail-safe power stations at remote pipeline valves for major multinationals such as Chevron and Exxon, conducted renewable energy field tests at the South Pole for the National Science Foundation, and managed community infrastructure projects in Indonesia and Haiti for the US Agency for International Development.

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TECHNOLOGY ASSESSMENT AND RESOURCE PROGRAM: RENEWABLE ENERGY STUDIES

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Mr. Dwight Davis is a Principal Program Manager at Applied Physical Sciences, Corp. He received his M.S.E. in Mechanical Engineering at The Catholic University of America in 1991, and his B.S. in Physics at the College of William and Mary in 1983. He manages projects addressing pile driving noise and structural vibration for offshore wind turbines, and other projects in structural and underwater acoustics. He also manages programs to develop and transition networked radar sensors for perimeter security and border surveillance, and other software and hardware system development efforts. He was the test director for a program to develop very small and low power radar nodes. He executed many noise and vibration control projects supporting the U.S. Navy and other clients, addressing shipboard structure-borne, radiated, airborne, and sonar self-noise via design models, measurements, and modeling technique development. He wrote acoustic sections of ship specifications, and reviewed noise related documentation.

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Mr. McNeilan is a Registered Professional Engineer with degrees in Civil Engineering and Geotechnical Engineering. His 37 years of professional experience has focused on the siting, design, installation, and performance of offshore energy structures and large coastal infrastructure. He directs Fugro's marine engineering and survey practice for offshore renewable energy along the U.S. east coast and in the Great Lakes regions. Mr. McNeilan has been the project manager for offshore wind off the U.S. east coast and the United Kingdom; offshore oil and gas developments along the U.S west and east coasts, the Gulf of Mexico, and Alaska, as well as offshore northern Europe, the Middle East, India, and southeast Asia; deep-water and near-shore LNG terminals; and many large coastal infrastructure projects. Mr. McNeilan was the principal in charge of the BOEMRE-funded research on the influence of seafloor scour on offshore wind turbines.

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Mr. Hagerman has more than 30 years experience researching renewable ocean energy systems, including offshore wind power, wave power, tidal current energy, and ocean thermal energy conversion (OTEC). His research focus areas are resource assessment, metocean extreme event analysis, site characterization, and energy cost modeling.

He is a research faculty member at the Virginia Tech Advanced Research Institute in Arlington, Virginia, and Director of Offshore Wind Research for the Virginia Coastal Energy Research Consortium, where he has coordinated the work at five universities to support a feasibility-level reference baseline design and cost estimate for a hypothetical offshore wind project off Virginia, to be compared with new-build fossil fuel generation.

Mr. Hagerman has been invited to brief federal and state regulatory agencies, and to testify before legislative committees of the U.S. Congress and the Virginia General Assembly. In 2009, the Minerals Management Service recognized his service with an Offshore Leadership Award.

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BIRD, BATS AND OFFSHORE WIND DEVELOPMENT: REMAINING INFORMATION GAPS

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Dr. David Bigger is an avian biologist in the Office of Alternative Energy Programs. He serves as the program's lead for renewable energy studies on the Atlantic OCS and as the staff lead for the Atlantic Offshore Wind Consortium's Data and Science Work Group. Dr. Bigger has over 12 years of professional experience with endangered species and natural resource management. Prior to joining the Department of Interior, Dr. Bigger was a Senior Scientist in the private sector where he directed the development of a habitat conservation plan's scientific research program for a threatened species, designed and managed an inland population monitoring program to assess the effectiveness of conservation strategies, and explored alternative conservation strategies for several listed species including the spotted owl and marbled murrelet. Dr. Bigger earned his Ph.D. in Biology from the University of California at Santa Cruz.

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Melanie Steinkamp is with the U.S. Fish and Wildlife Service and is the mid-Atlantic Coordinator for the Atlantic Coast Joint Venture, a partnership dedicated to conserving habitat from Maine to Puerto Rico. Melanie also co-leads the Atlantic Marine Bird Conservation Cooperative, a voluntary group striving to connect researchers working to address issues faced by birds in their marine environments. She has spent much of her professional life overseeing research and developing monitoring methods to aid in the conservation of waterbirds and seabirds.

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Ms. Tims is a professional ornithologist with more than twenty years of experience in terrestrial ecology and natural resource management and environmental impact assessment. Ms. Tims has conducted environmental impact assessment and natural resources studies throughout the United States, South America, Africa, and Europe involving biodiversity assessment and management, wildlife and vegetation management, endangered species survey and management, and stakeholder engagement related to biodiversity and the interactions between biological and social issues. Ms. Tims has particular expertise in assessing the effects of wind power projects on biological communities, particularly birds and endangered species. Ms. Tims recently participated in the March 2010 Wind Turbine Guidelines Advisory Committee meeting, where draft recommendations for protection of birds and bats at wind projects were unveiled and discussed.

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Dr. James Woehr is an Avian Biologist in the Environmental Assessment Branch of the United States Department of the Interior Bureau of Ocean Energy Management, Regulation and Enforcement in Herndon, VA. Jim has been a Certified Wildlife Biologist since 1979 and has over 25 years of involvement in bird conservation at local, state, and national levels. He has a B.S. degree in aerospace engineering, an M.S. in Wildlife Management, and a Ph.D. in Ecology. Jim has been a Design Engineer in the aerospace industry, an Environmental Science Professor at the State University of New York College at Plattsburgh, a Financial Planner and Investment Broker for a Wall Street firm, Coordinator of Nongame and Endangered Species programs for Alabama Department of Conservation and Natural Resources, and Senior Scientist for the Wildlife Management Institute before joining BOEMRE as the headquarters avian biologist. These diverse experiences provide Jim with an understanding of the perspectives of the multiple parties in the wind energy development business and lead him to seek affordable, responsible solutions acceptable to all parties. Jim represents BOEMRE at national and international bird conservation meetings and in negotiations with state and federal agencies and wind energy developers over bird conservation, monitoring, and mitigation measures related to siting and development of offshore wind energy facilities. He also reviews BOEMRE's NEPA documents for adequacy in addressing bird conservation needs and issues. Jim is also an active participant in BOEMRE's environmental sciences program in which he proposes avian research projects, leads evaluation teams selecting the contractors who will perform the studies, and oversees the performance of selected contractors.

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Dr. Veit, a seabird ecologist and tenured professor at the City University of New York, has led dozens of research cruises on National Science Foundation, National Oceanographic and Atmospheric Administration (NOAA), and Scripps Institute of Oceanography icebreakers and research vessels. He has been a team leader responsible for grant oversight for four grants from the National Science Foundation, including supervision of teams of ten persons at a time. In recent years, Dr. Veit has been very active in boat-based seabird surveys offshore in the mid-Atlantic, and has led numerous graduate students and ornithological professionals in seabird research on NOAA vessels. He has published about 75 peer-reviewed scientific papers, about half of these on ecology and behavior of seabirds at sea.

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