WELCOME!

U.S. Department of Energy

National Environmental Policy Act (NEPA)

Public Scoping Meeting

for the New England Aqua Ventus I Project

DOE/EA-2049 Public Scoping Informational Meeting

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

DOE Representatives	University of Maine Project Team Representatives	Other Federal and State Representatives
Alana Duerr, Ph.D. *Offshore Wind Lead*	**Nate Johnson** *ORPC* *Outreach Coordinator*	**Jay Clemont** *U.S. Army Corps of Engineers* *Senior Project Manager*
Lori Gray *NEPA Division Director*	**Jake Ward** *Umaine Vice President for Innovation and Economic Development*	**Robert Marvinney** *Maine Geological Survey/ Department of Agriculture, Conservation and Forestry* *State Geologist*
Diana Heyder *NEPA Specialist*	**Dick Hall** *SGC Engineering,* *Senior Engineer*	
Nicole Serio *Environmental Specialist*	**Joshua Plourde** *Manager of Communications, IT at UMaine Advanced Structures and Composites Center*	

DOE/EA-2049 Public Scoping Informational Meeting

- Meeting Structure and Online Protocols

- Short Presentation:
  - DOE Offshore Wind Demonstration Program Overview
  - DOE National Environmental Policy Act (NEPA) Process
  - Description of Project Activities

- Question and Answer Period for Remote Participants
  - "Chat" questions or comments will not be considered in the draft EA.
  - Written comments must be submitted on or before March 22 via e-mail at AquaVentus1EA@ee.doe.gov or via mail to DOE.
- Open House

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy









DOE Offshore Wind Demonstration Program Overview

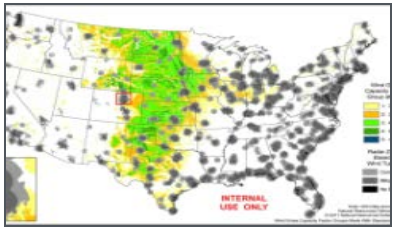
Alana Duerr, Ph.D.
Offshore Wind Lead
Wind Energy Technologies Office
March 1, 2017

Wind Energy can be a Valuable Option for Electricity Generation in all 50 States

The Wind Energy Program aims to accelerate widespread U.S. deployment of clean, affordable, reliable, and domestic wind power to promote national security, economic growth, and environmental quality.

Programmatic Focus

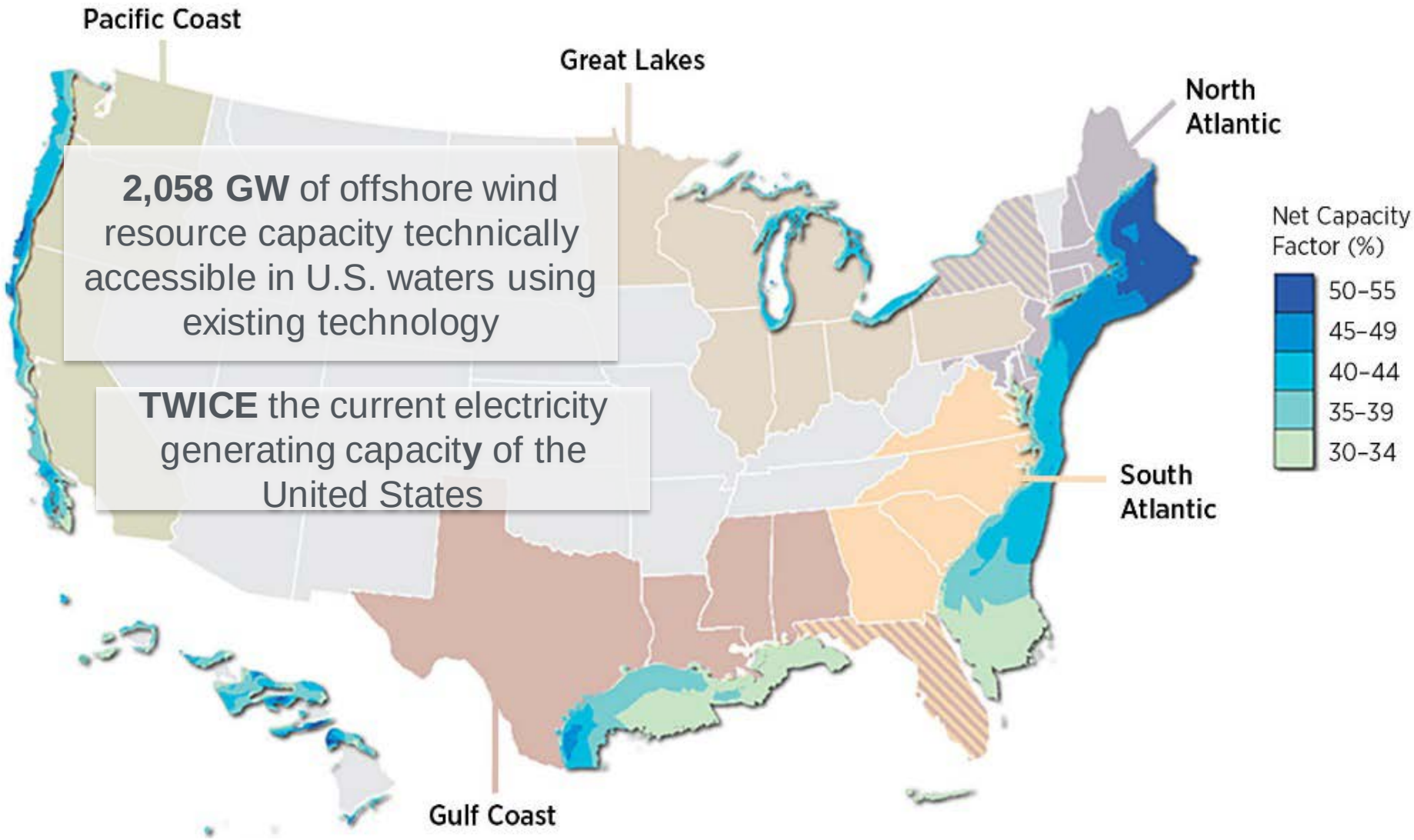
- **Establish a competitive U.S. offshore wind industry** through offshore system development and demonstration
- **Eliminate and reduce market barriers** through accelerated siting and deployment strategies
- **Optimize wind plant performance to achieve significant cost of energy reductions** through R&D, advanced component development, reliability improvements and resource characterization
- **Optimize grid integration and transmission** for wind systems through integration studies and operational forecasting tool development



Reduce Costs

- Reduce the unsubsidized market LCOE for **offshore wind** energy systems from a reference of $.20/kWh in 2010 to $.10/kWh by 2030

Significant Offshore Wind Resource Nationwide

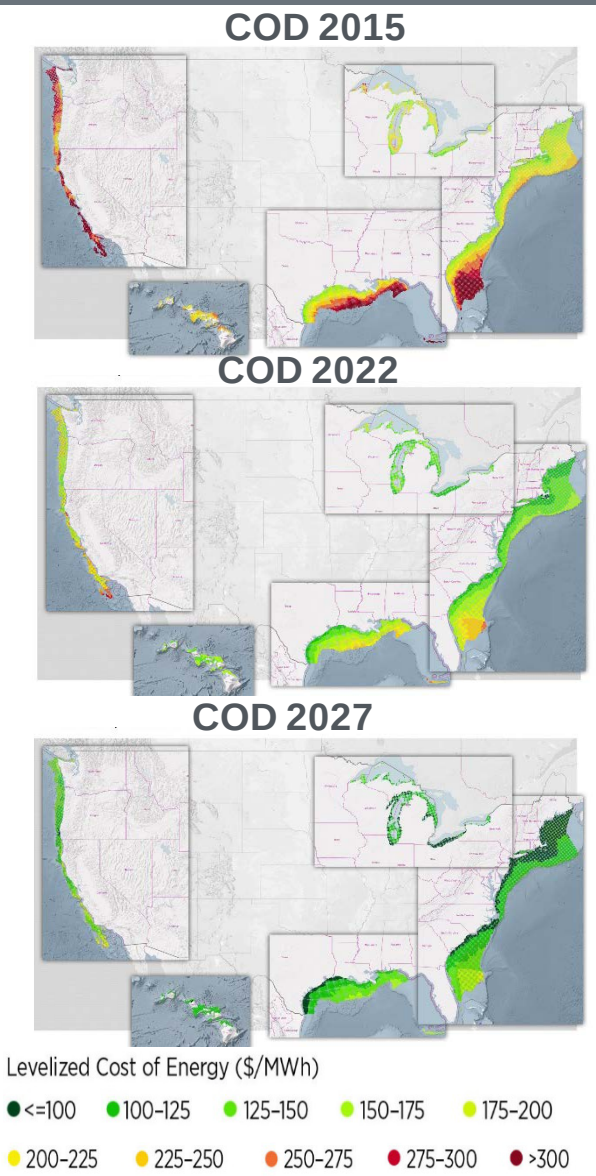


2,058 GW of offshore wind resource capacity technically accessible in U.S. waters using existing technology

TWICE the current electricity generating capacity of the United States

Offshore Wind Opportunities and Challenges

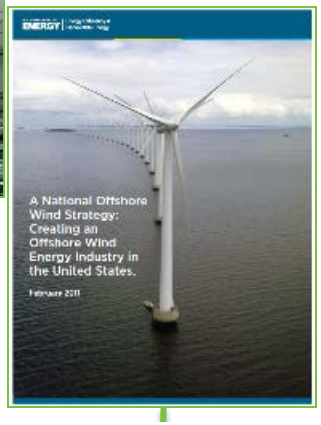
- **Offshore Wind Represents a Significant Opportunity for the Nation**
  - Technically accessible resource with ample space available for lease **(2,058 GW)**
  - Electricity demand growth and power plant retirements create a significant market opportunity for new generation
  - Potential to achieve competitive cost
- **Key Challenges Remain**
  - Reducing technology costs and risks
  - Ensuring efficient, effective regulatory construct
  - Supporting effective stewardship of the environment and public space
  - Improving understanding of offshore wind's benefits



Historic Investments in Offshore Wind
Key Milestones

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

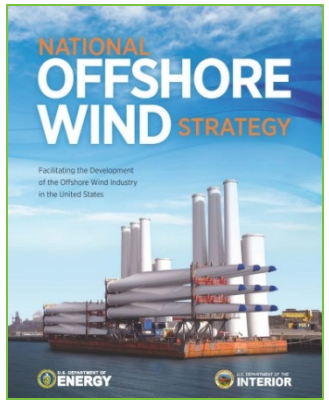
DeepCWind Consortium



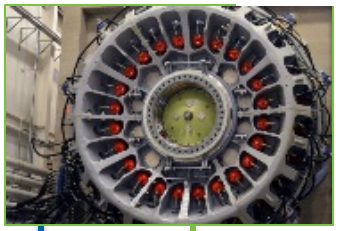
2011 National OSW Strategy

Demonstration Projects Initiated

DOE Lidar Buoys



National Offshore Wind Strategy (2016)



ARRA Funding of Test Facilities

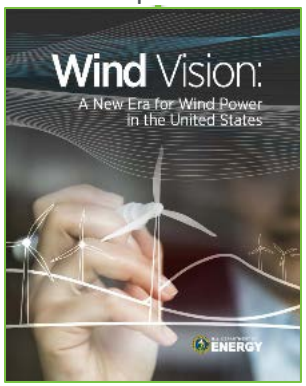
2009

Technology and Market Barrier Funding Opportunities

Deployment of UMaine VolturnUS

2015

Wind Vision Report



Funding Opportunity Announcement (FOA) Goals: Technology

- Install innovative offshore wind systems in U.S. waters, rapidly and responsibly
- **Drive down the cost of offshore wind with demonstration project innovations**

Advanced Materials

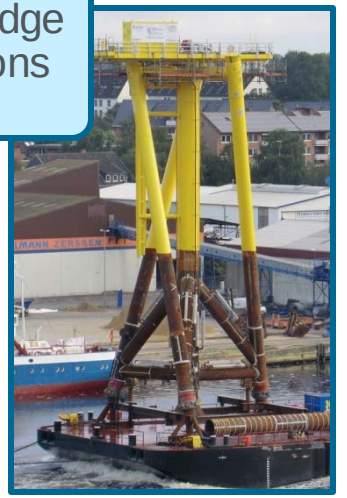
Demonstrating Innovations

Improved Manufacturing

Floating Platforms

Large Direct Drive Turbines

Leading-Edge Foundations



FOA Goals: Permitting and Siting

- Evaluating current siting and approval processes and identifying opportunities for improvement
- Advance the regulatory frameworks vital to implementing offshore wind in the U.S.
- Address public concerns associated with the concept of offshore wind

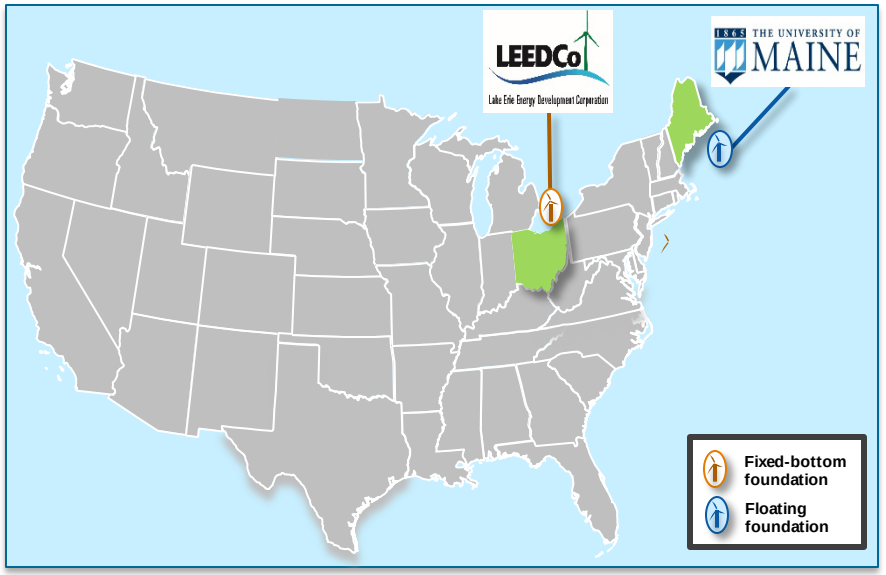
Current Activities
Offshore Wind Demonstration Projects

DOE seeks to demonstrate offshore wind innovations at multi-megawatt scale to reduce the cost of energy and address regional challenges and opportunities, expediting development of the US offshore wind industry ($168M)

The two projects will demonstrate unique technology innovations that have significant potential to lower the cost of energy.

These projects will deploy foundation technology that has never been deployed on a MW scale:

- University of Maine
  - **Floating concrete semisubmersible**
- LEEDCo
  - **Monobucket** (monopile with suction bucket) to **resist surface ice conditions** of the Great Lakes



Potential for Collaboration/Data Sharing

- Highly instrumented platforms
- Project cost data

DOE Funding

Funding Period	DOE Funding Amount	Cost Share	Funding Objectives
Budget Period 2 (FY 15/16)	$3M/3.7M	20%	• **Design/Engineering:** Completion of 100% Front End Engineering Design (FEED) including vendor quotes from all major suppliers, and independent verification of costs and schedule by an approved 3rd party. • **Installation/O&M:** Completion of Installation, and Operations and Maintenance plans with vendor information based on quotes received to complete the Criterion #1 Design milestone. • **Permitting/NEPA:** Completion of necessary major regulatory processes including lease issuance, interagency consultations, and NEPA documentation and plan approval. • **Grid/PPA:** Completion of necessary grid interconnection processes, including grid operator interconnection agreements, utility specific requirements, and any needed power off-take agreements.
Budget Period 3	$13.3M	50%	• **Reach Financial Close**
Budget Period 4	$13.3M	50%	• **Initiate Fabrication/Construction**
Budget Period 5	$13.3M	50%	• **Finalize construction, initiate operations**

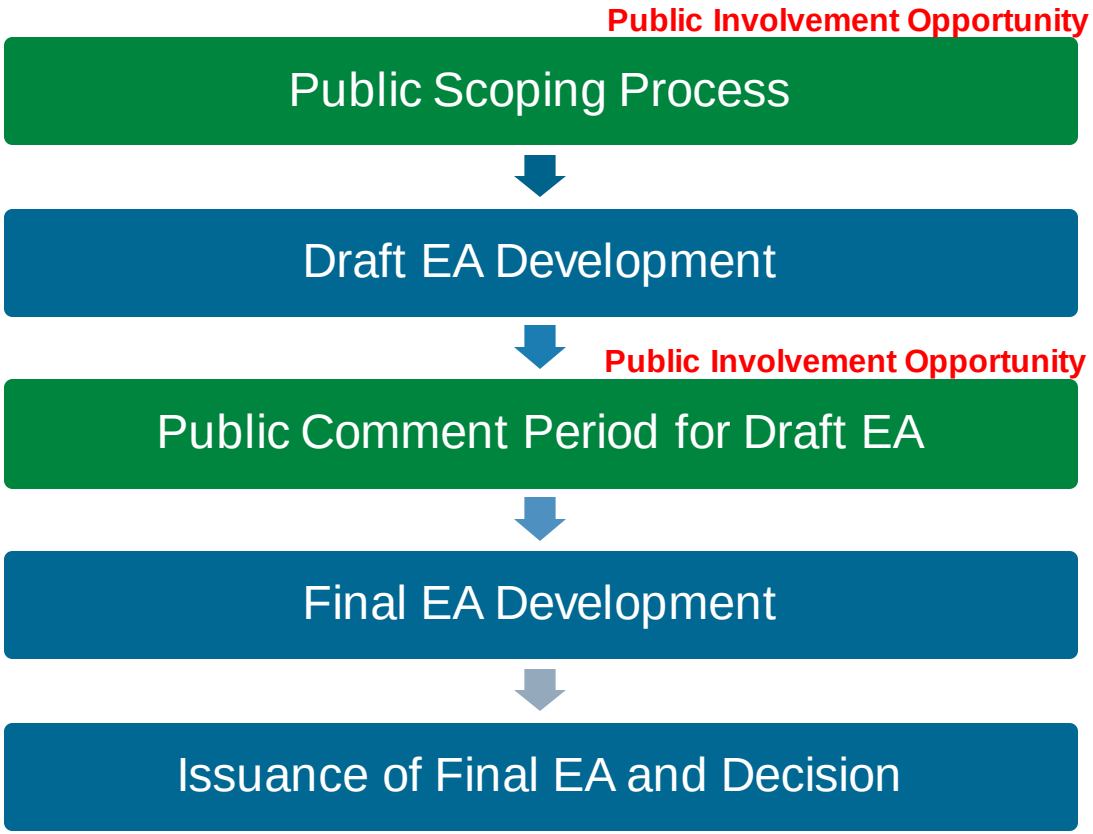
- **DOE will conduct a Go/No-Go Review between each Budget Period (BP)**
- **BPs were intended to be approximately 1 year; however BP2 is projected to be 18-months, and BP 3-5 may be shorter than 1-year**

Why Demo Projects?

To Increase Understanding and Reduce Uncertainty

- **The demo projects will be laboratories at sea**
  - Powerful opportunity to collect real data from operational projects that will be made publically available
- **The demo projects showcase innovative commercial scale technology, and will be deployed on a limited scale**
  - Determine the viability of commercial scale development from a technology, operational, environmental, and cost perspective
- **Demo projects will reduce uncertainty for stakeholders**
  - Award funds can be used to answer environmental, technology, and socio-economic questions

Key Steps in the DOE National Environmental Policy Act (NEPA) Process



Public scoping notice and project details posted for public review on our website:

www.energy.gov/node/2053718

DOE Proposed Action and Alternatives

DOE's Proposed Action – DOE is proposing to provide the University of Maine funding to support the development of the New England Aqua Ventus I project (proposed project).

- Development actions include design, construction and commissioning of the proposed project; environmental monitoring; and up to five years of post-construction structural and performance monitoring data collection.
- Operation, maintenance and eventual decommissioning of the proposed project will also be analyzed in the EA since they are connected actions.

Alternatives – to be analyzed in the EA

- Power and fiber optic cable to Monhegan Island
- No Action Alternative

Resources to be Considered in the Draft Environmental Assessment

- Aesthetics and Visual Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Floodplains and Wetlands
- Geology, Sediment, Soils
- Noise
- Ocean and Land Use
- Socioeconomics
- Water Quality

Public Comment Opportunities

This is the first opportunity for public comment.

The public comment period is open until **March 22, 2017**.

Please provide your written comments on DOE's Proposed Action (i.e. providing funding for the proposed project), alternatives, and the issues and resources that should be considered in the Draft EA.

Comment Options

In-Person

- Note Cards Are Available
- Computer Laptop

Remote

- Comments accepted via electronic mailbox or by mail

How Can You Be Involved?

Please Ask Questions!

DOE and University of Maine representatives are here to answer questions and accept your comments. Provide written comments in person at this meeting, by mail or email no later than **March 22, 2017**.

Stay Involved!

If you would like to be notified of upcoming meetings, provide your name and address on a comment card or send a request to AquaVentus1EA@ee.doe.gov

Stay Up-to-Date!

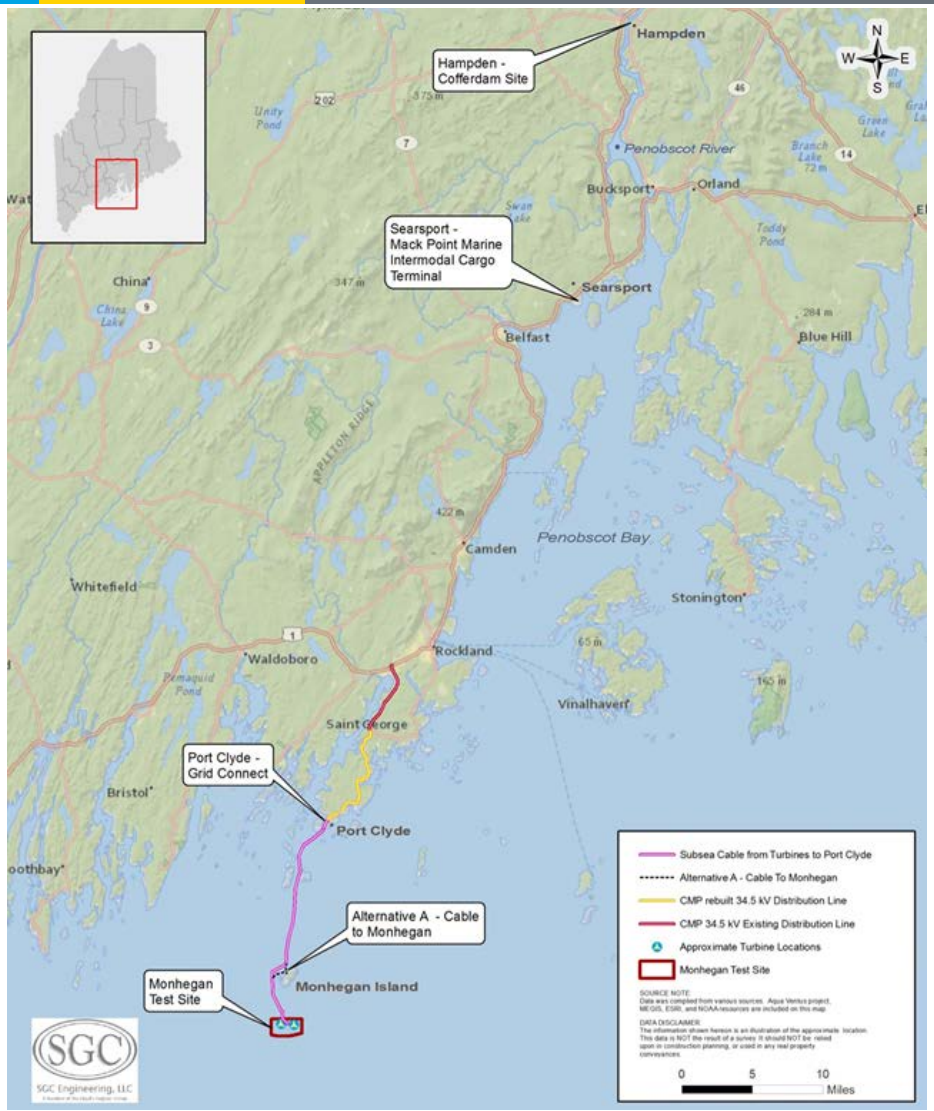
Please check DOE website for updates. Once completed, the Draft EA will be available for your review at:

www.energy.gov/node/2053718

Project Description

Demonstration-scale offshore wind facility located ~2.5 miles south of Monhegan Island, Maine and ~12 miles off the mainland

- One of the first offshore wind projects in the United States.
- Two 6.0* MW wind turbines on floating concrete foundations.
- Interconnection to an existing Central Maine Power distribution line located in Port Clyde.
- Alternative A: Additional interconnection to Monhegan Plantation Power District on Monhegan Island.



*Due to rapid advances in turbine technology that could result in energy production benefits, the University of Maine design team is also evaluating the possibility of an 8 MW turbine. All design details are preliminary.

Turbine Assembly and Installation

Floating foundations would be constructed in a cofferdam along Penobscot River in Hampden, Maine.

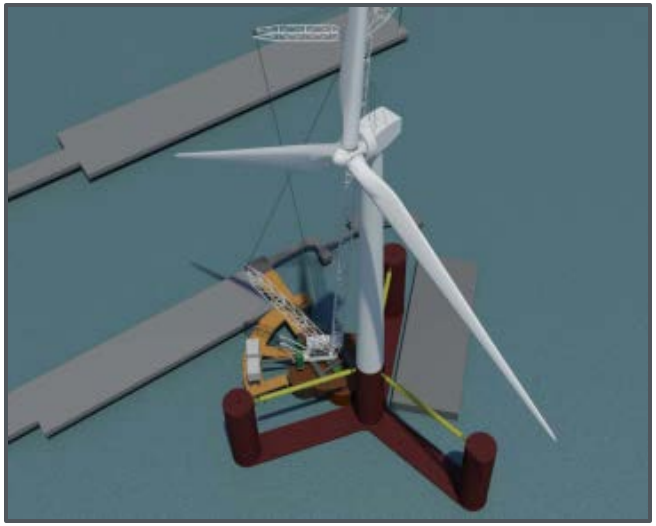
- Cofferdam excavation and construction ~5 months.
- Foundations would take ~1 year to complete.

Foundations would be towed to Mack Point Intermodal Cargo Terminal in Searsport for turbine assembly and installation.

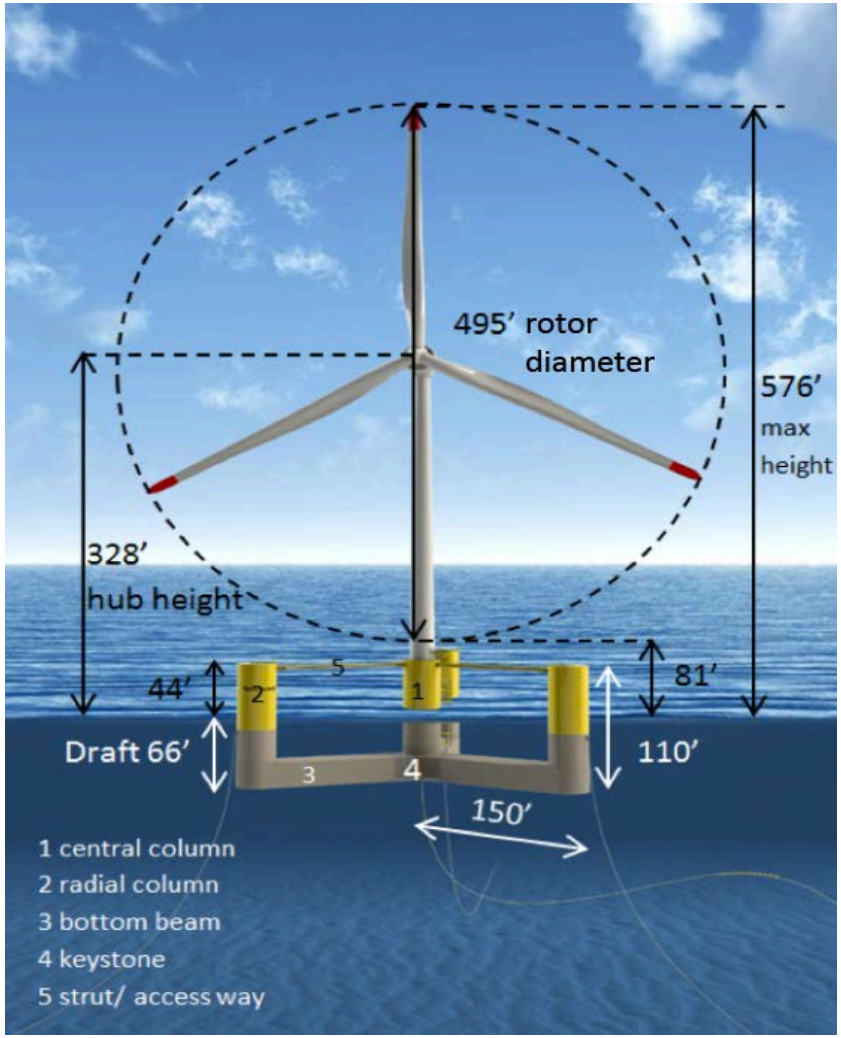
Complete structure would be towed to the Monhegan Test Site for commissioning.

Duration of Project:

- Turbine and foundation performance data would be collected for up to five years.
- Operate for ~20 years



Turbines and Foundations



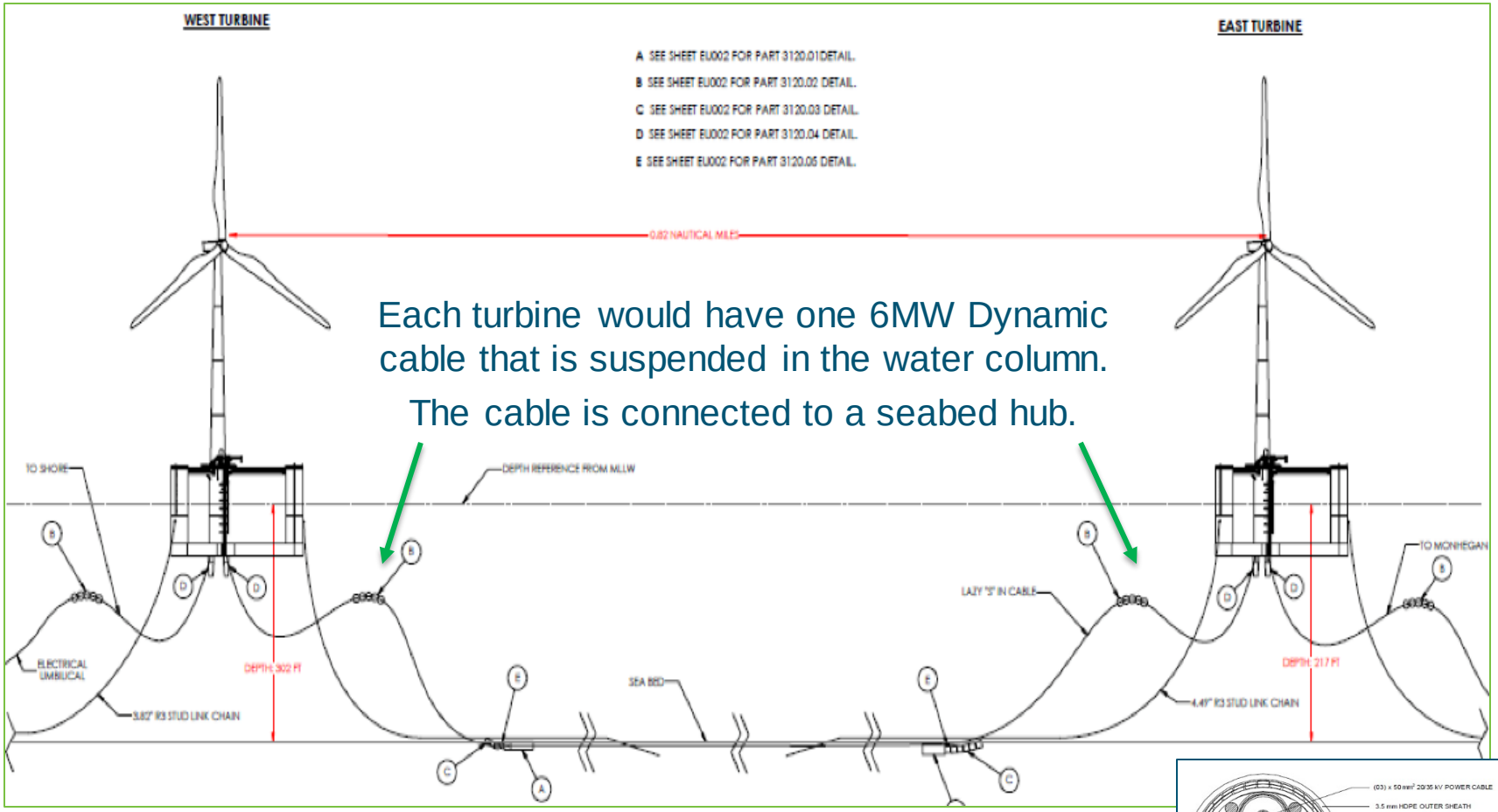
Turbines:

- Turbine Hub Height: ~328 feet above waterline
- Maximum Blade Height: ~576 feet above waterline
- Rotor diameter: ~495 feet
- Turbine would be painted white
- 3–4 chain mooring lines and 3-4 anchors per structure
- An 8 MW turbine would be ~5%-10% larger

Floating Foundation:

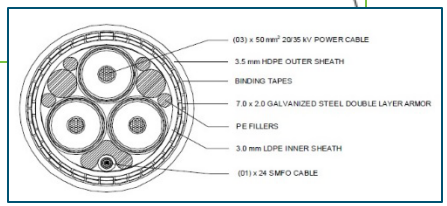
- Reinforced concrete with three columns forming a tri-float configuration (semi-submersible)
- Extend ~66 feet below waterline
- Extend ~44 feet above waterline
- Diameter of foundation: ~301 feet
- Flashing lights in accordance with U.S. Coast Guard navigation requirements
- Foundations would be ~10%-20% larger for an 8 MW turbine

Subsea Cable Construction and Layout



A 12 MW Static Cable will be connected to the hub.

The cable would be buried or on the seafloor and is 5.5" in diameter.



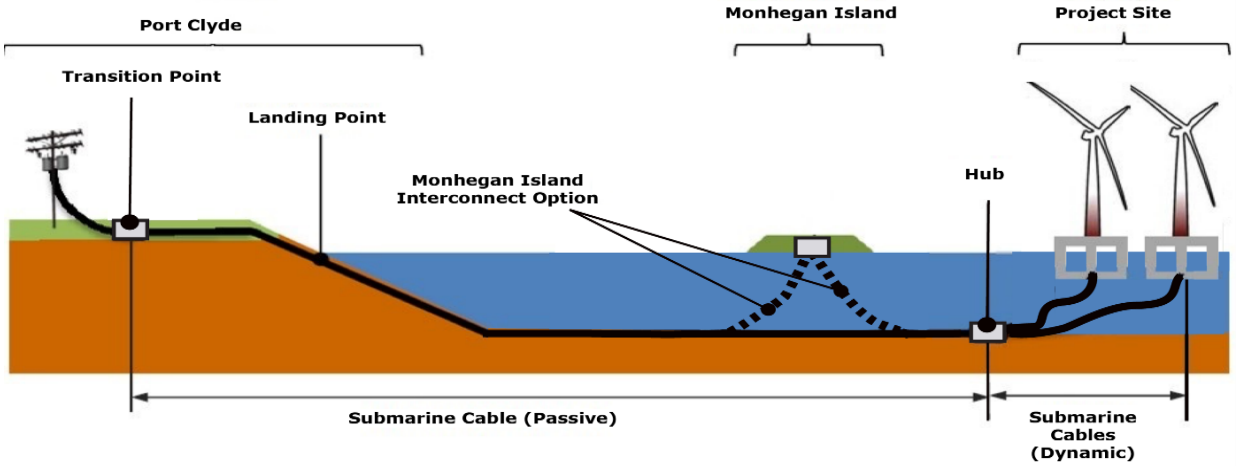
Cable Landing Locations

Port Clyde, Maine

- Export cable would interconnect with existing Central Maine Power (CMP) distribution line.
- Landfall Point - Several locations under consideration (~1,200 feet apart).
- CMP plans to rebuild ~8.8 miles of distribution line between Port Clyde and Rockland substation.

Monhegan Island, Maine (Alternative A)

- Landfall Point - Deadman's Cove or nearby location to connect to a transformer.
- Cable would run from transformer underground or overhead on a rebuilt pole line for ~680 feet to Lobster Cove Road.
- From Lobster Cove Road cable would run underground for ~650 feet and terminate at the Monhegan Plantation Power District generator/switchgear.



Online Question and Answer Session

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Ms. Diana Heyder, NEPA Division
U.S. Department of Energy
Golden Field Office
15013 Denver West Parkway
Golden, CO 80401

Additional information available at: www.energy.gov/node/2053718

Maine's 2009 Ocean Energy Test Siting Process

Robert G. Marvinney
State Geologist
Maine Geological Survey
Department of Agriculture, Conservation and Forestry
February 2017

Site Selection Criteria and Process

Legislation – passed unanimously in June 2009

- **Established Siting Requirements**
- **Directed Dept Conservation and State Planning Office to Conduct a Collaborative Process**
- **Scoping Meetings, Public Meetings**
- **December 15 Deadline**

Legislated Criteria

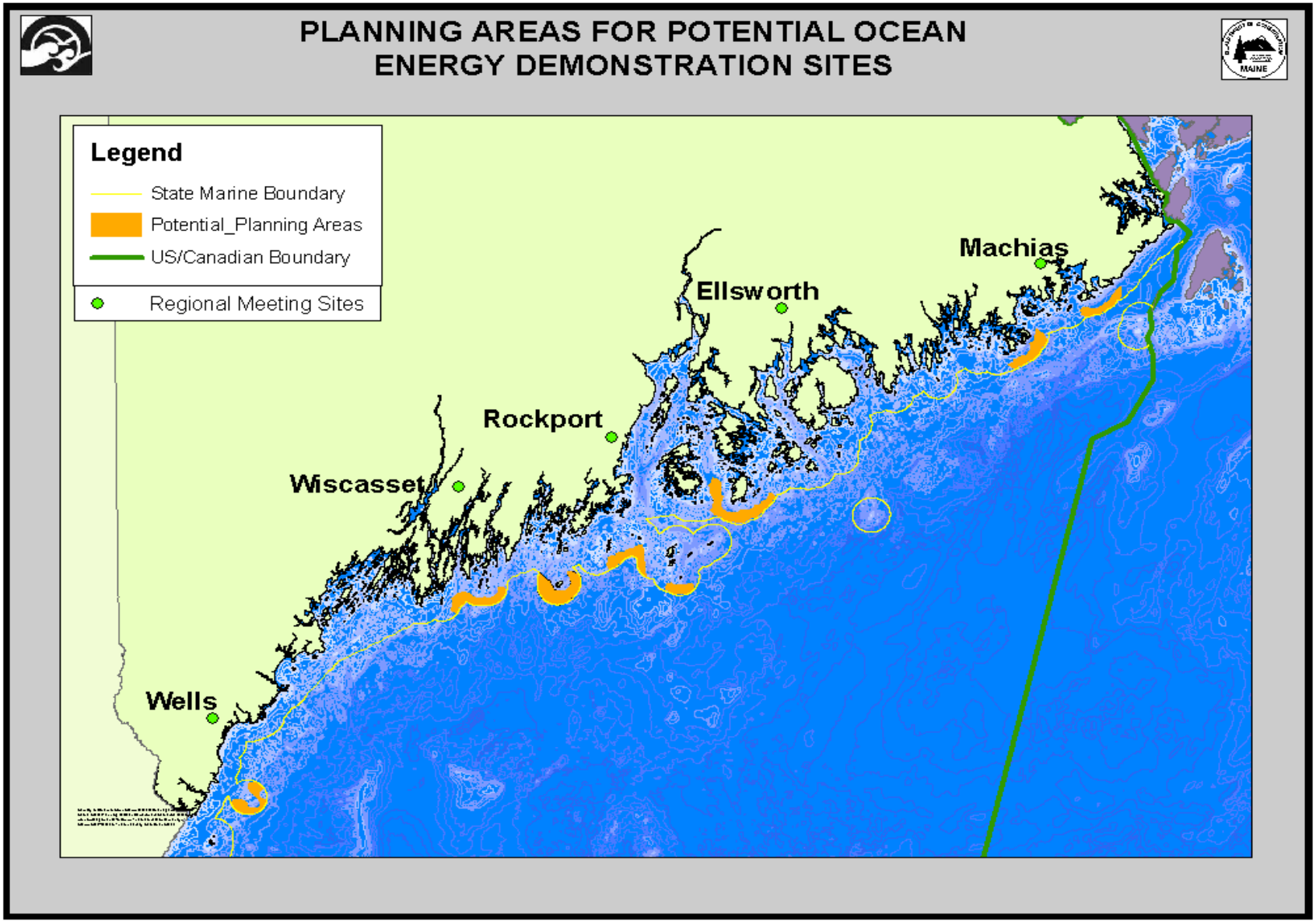
Within Maine's Coastal Waters (3 miles)

At least 60 Meters Feet Deep (~200 ft)

Average Annual Wind Speeds of >17 MPH

Avoid Navigation Channels, Obstructions

Initial Planning Areas



DEMONSTRATION SITES

- Initial Mapping: 8 Large “Possible” Areas
- Additional legislated siting considerations:
  - *Impacts on protected natural resources and scenic resources*
  - *Impacts on marine mammals*
  - *Impacts on commercial fishing and navigation*
  - *Impacts on recreation, existing public access, and other existing uses*
  - *Proximity to deep water port facilities, transportation and transmission infrastructure, and existing environmental monitoring devices*
  - *Geology of the ocean bottom*
  - ***Community Support***

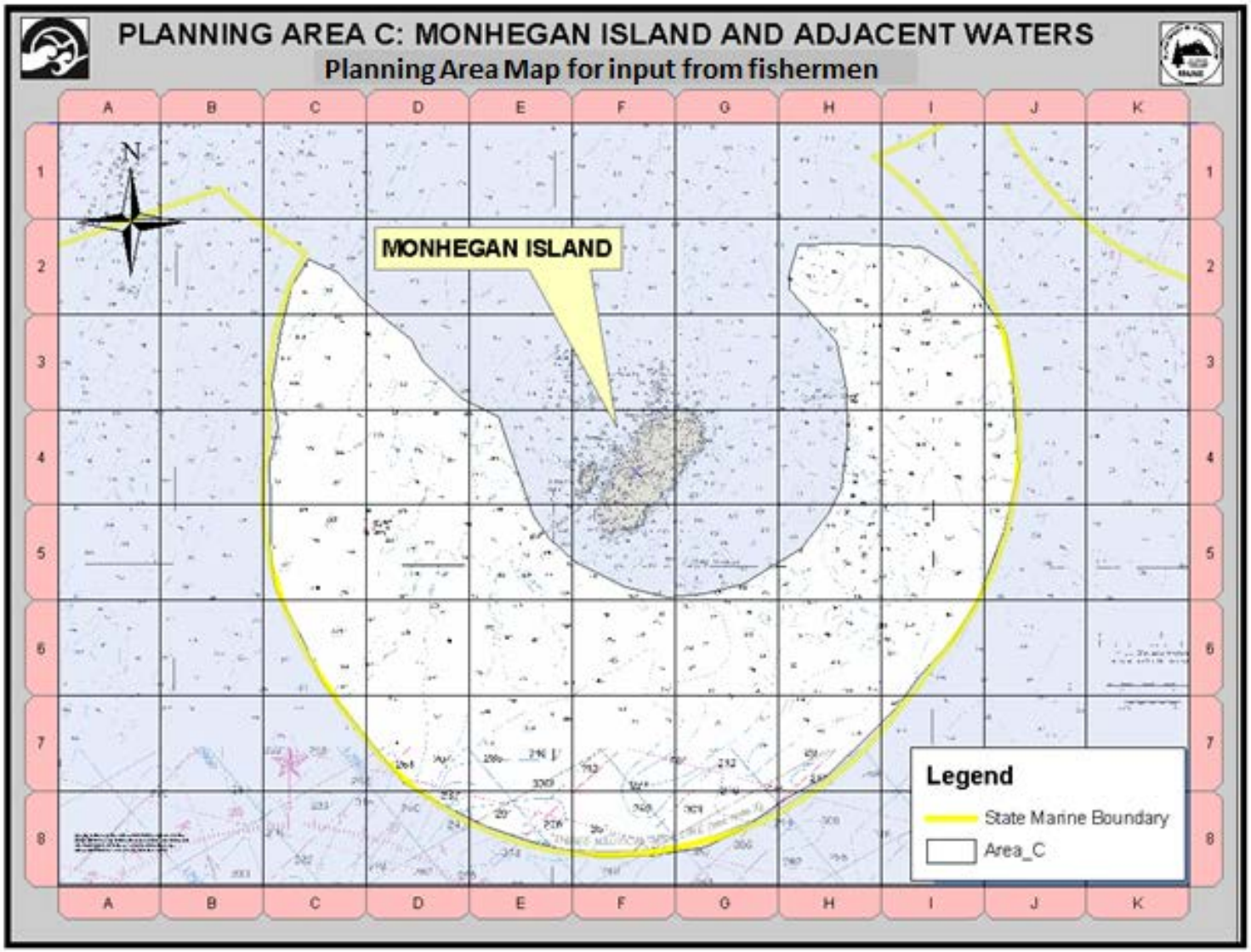
Outreach Process

- Identified “Planning Areas” using only basic criteria, then sought feedback
- 25 Scoping Meetings
  - Monhegan fishermen 8/26/2009
  - Monhegan Island Community 10/8/2009
- 5 Regional Public Meetings
- Feedback from meetings used to identify smaller “demonstration” sites
- Draft demonstration sites released 10/27/09
- 30-day public comment period.
- Additional comments further refined sites.
- Final sites selected 12/15/09

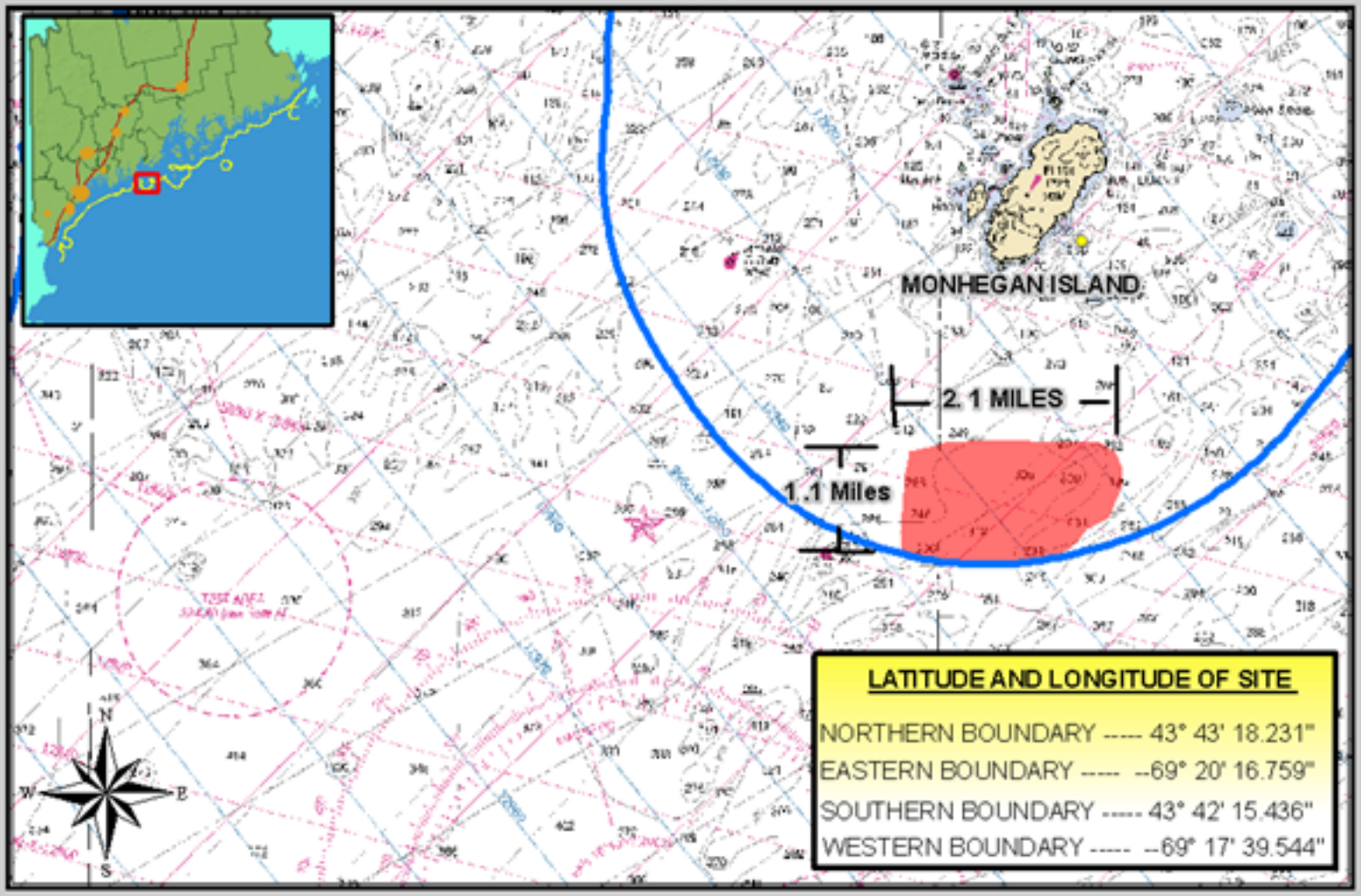
Outreach Process

- Scoping Meetings
  - August – December 2009
  - 25+ meetings with small groups
  - Fisherman, community leaders, NGOs

Scoping Meetings: Mapping exercise



MAP C



LATITUDE AND LONGITUDE OF SITE

NORTHERN BOUNDARY ----- 43° 43' 18.231"
EASTERN BOUNDARY ----- --69° 20' 16.759"
SOUTHERN BOUNDARY ----- 43° 42' 15.436"
WESTERN BOUNDARY ----- --69° 17' 39.544"

State Marine Boundary
Test Site

MONHEGAN ISLAND OCEAN ENERGY TEST SITE

0 0.3 0.6 1.2 1.8 2.4
Miles

Map by Matthew Nitze
Maine State Planning Office
Sources: ME GPO, ME DMR, ME DEP/ME IFW, ME GIS, NOAA, US FWS, ME BG

Questions?

Robert G. Marvinney

State Geologist

Maine Geological Survey

207-287-2804

robert.g.marvinney@maine.gov

PERMIT AUTHORITIES
What triggers Corps jurisdiction?

Section 10 - Rivers and Harbors Act of 1899

- Regulates work in navigable waters of the U.S.
- Includes virtually all temporary & permanent work
- Navigable waters = all tidal waters & other waterways that have been specifically declared navigable by Congress

Section 404 - Clean Water Act of 1972

- Regulates dredged & fill material discharges in waters of the U.S.
- **Includes ANY temporary or permanent fill** as well as certain excavation/demolition activities
- Waters of U.S. = all navigable waters and all others including wetlands

Section 103 - Marine Protection Research Sanctuaries Act

- Regulates transportation of dredged material ocean disposal.

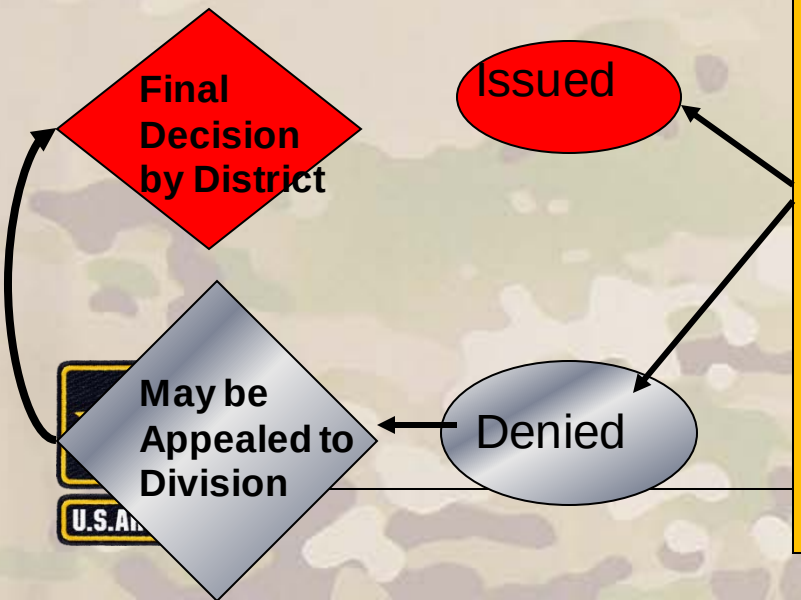
New England Aqua Ventus I And Corps Jurisdiction

- **Work potentially subject to Corps jurisdiction:**
  - **Tower Installation**
  - **Transmission line – installation along the ocean bottom and installation on land that will require wetland clearing, temporary access fills, pole foundations in wetlands, anchors in wetlands.**
  - **Secondary work, e.g. relocating moorings and other structures or shoreline stabilization or on land, substations.**
- **Work not subject to Corps jurisdiction:**
  - **Work on uplands or adjacent to resources.**
- **A Corps individual Permit will likely be required**
- **Application likely filed concurrent with any state application**
- **Corps permit likely one of the last obtained**

Individual Permit Review Process

Full Public Interest Review

Factors		Other Requirements
Conservation	Safety	Water Quality Certification
Economics	Water Quality	404b1 Compliance
Aesthetic	Fish/Wildlife	NEPA
Wetlands	Erosion	CZM
Historic Prop.	Water Supply.	End. Species Act
Flood hazards	Food/Fiber Prod	Wild/Scenic Rivers
Floodplain	Property ownership	Essential Fish Habitat
Land Use	General Env. Concerns	
Navigation	Needs/Welfare of the people	
Recreation	Mineral Needs	
Energy Needs		



COORDINATION & COLLABORATION
AN ACRONYM JUNGLE…..

Federal	State	Local	Other
US EPA	DEP	*Citizen Groups*	Audubon
US FWS	DMR	Riparian Owners	Nature Conservancy
NMFS	IF&W	Cons. Commissions	DU
NRCS/USDA	BPL	Island Institute	NWF
US Coast Guard	DHS	Planning Boards	MCHT
DOI	SHPO	Fishermen	Sierra Club
BIA	Tribes	Land Trusts	CLF
ACHIP	State Planning		
DOE	Legislature		
FEMA	CZM		
Congress			

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