GOVERNOR'S
Energy Office

Committee on Marine Resources
Offshore Wind Overview
February 23, 2021

CLIMATE COUNCIL GOALS

12.01.20
Climate Action Plan Delivered

ACHIEVE STATE CARBON NEUTRALITY BY 2045

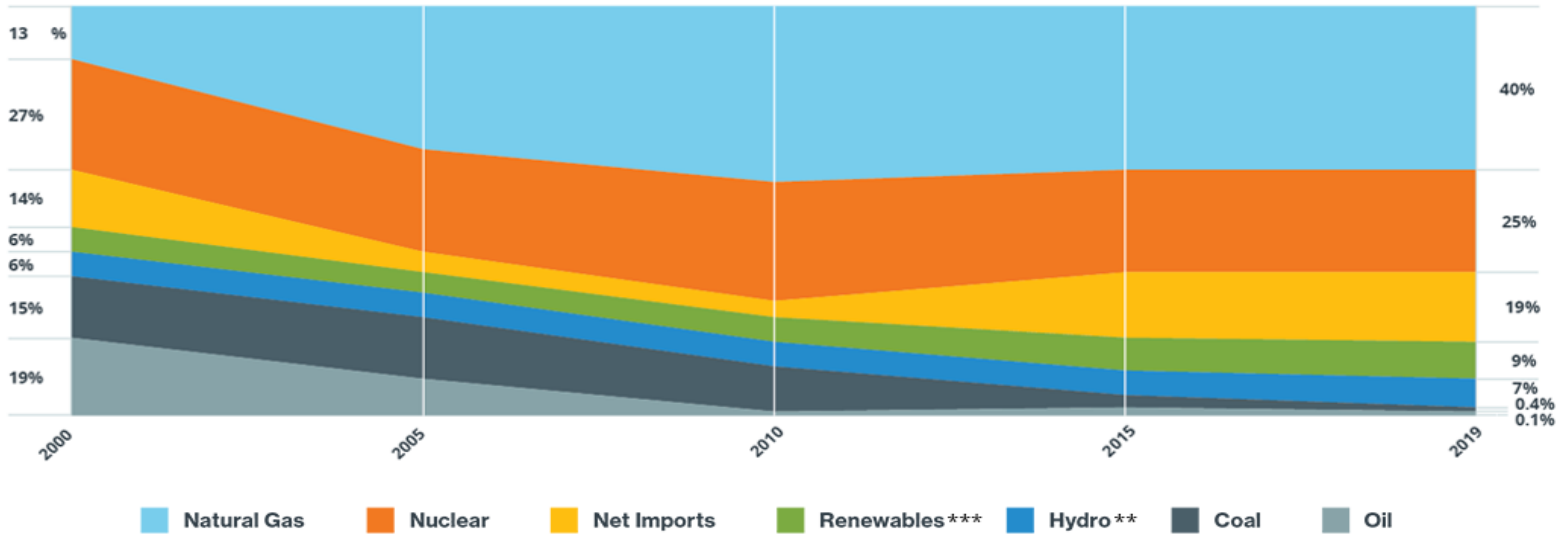
REDUCE MAINE'S GREENHOUSE GAS EMISSIONS BY TARGETS OUTLINED IN STATE LAW

45%
BELOW 1990 LEVELS BY 2030

80%
BELOW 1990 LEVELS BY 2050

ENSURE MAINE PEOPLE, INDUSTRIES, AND COMMUNITIES ARE RESILIENT TO THE IMPACTS OF CLIMATE CHANGE.

Percentage of Total Electric Energy by Resource Type

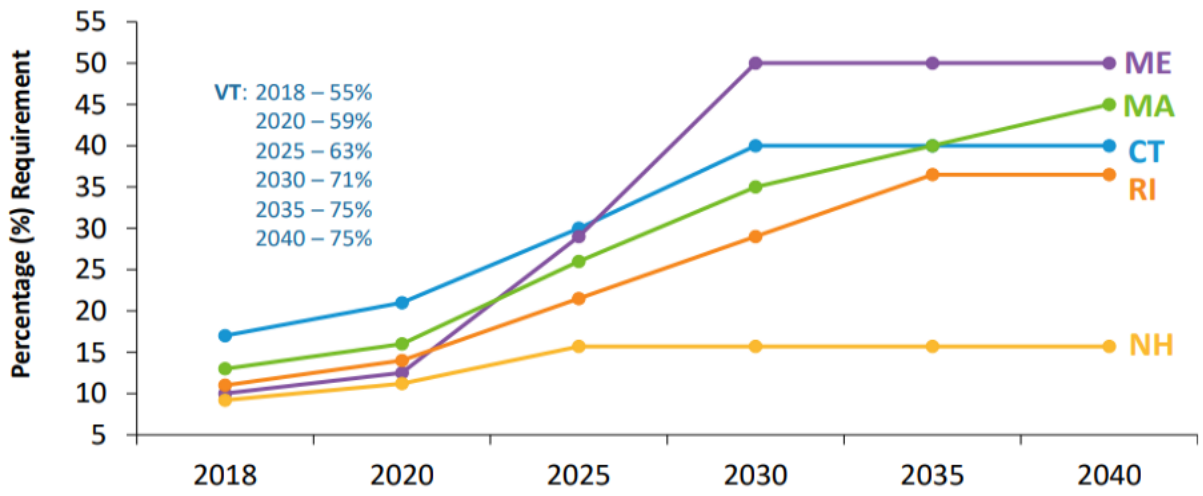


*Data are subject to adjustments. This chart approximates the amount of generation by individual fuels used by dual-fuel units, such as natural-gas-fired generators that can switch to run on oil and vice versa. Before 2016, generation from such units was attributed only to the primary fuel type registered for the unit.

**Includes pondage, run-of-river, and pumped storage.

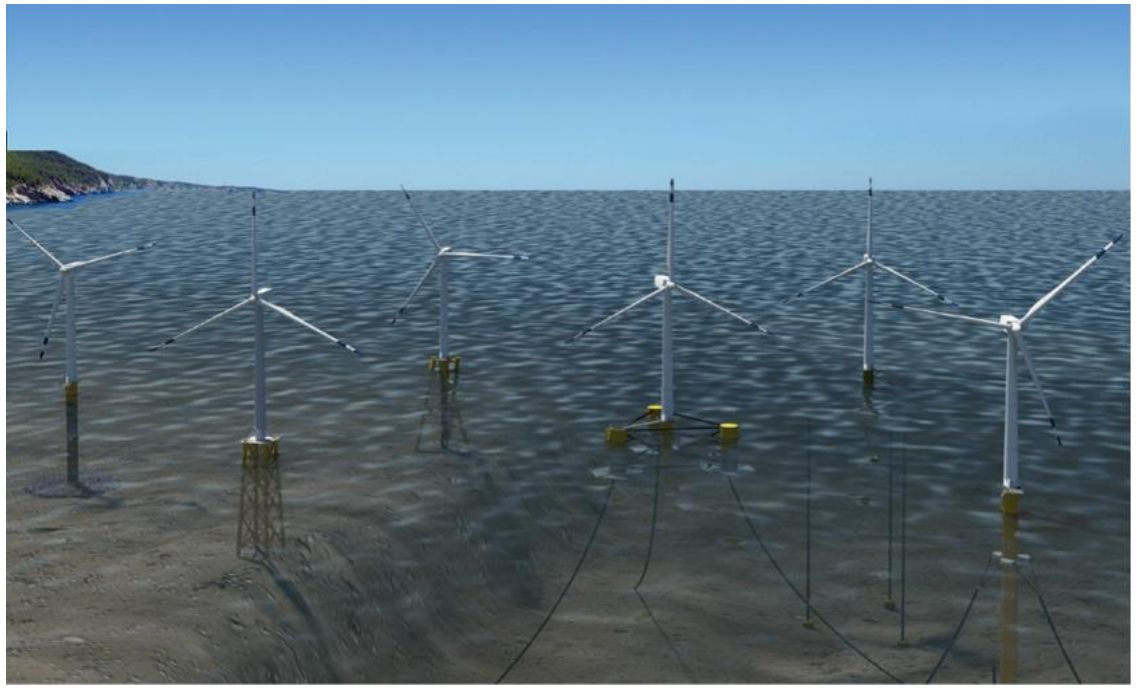
***Renewables include landfill gas, biomass, other biomass gas, wind, grid-scale solar, municipal solid waste, and miscellaneous fuels. Hydro is not included in this category primarily because the various sources that make up hydroelectric generation (i.e., conventional hydroelectric, run-of-river, pumped storage) are not universally defined as renewable in the six New England states.

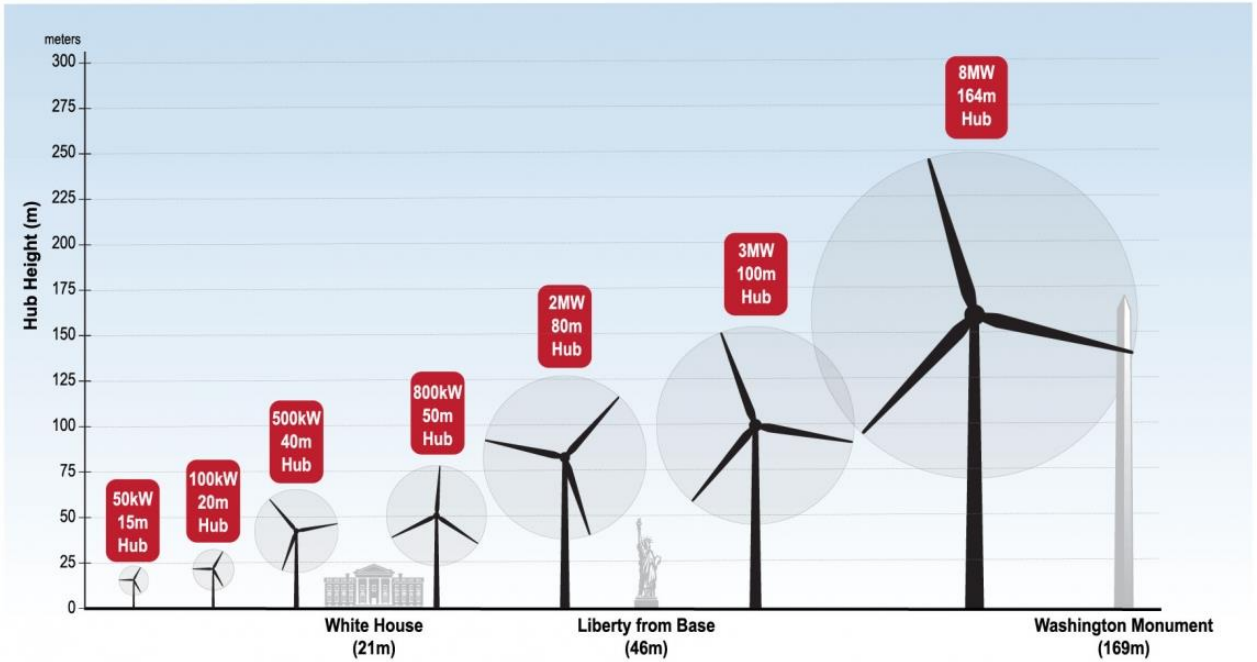
Source: ISO New England



Source: ISO New England

Offshore Wind - Technology





Offshore Wind Innovation and Cost Trajectory

Floating Wind Energy Costs Follow Fixed-bottom Offshore Wind Trends

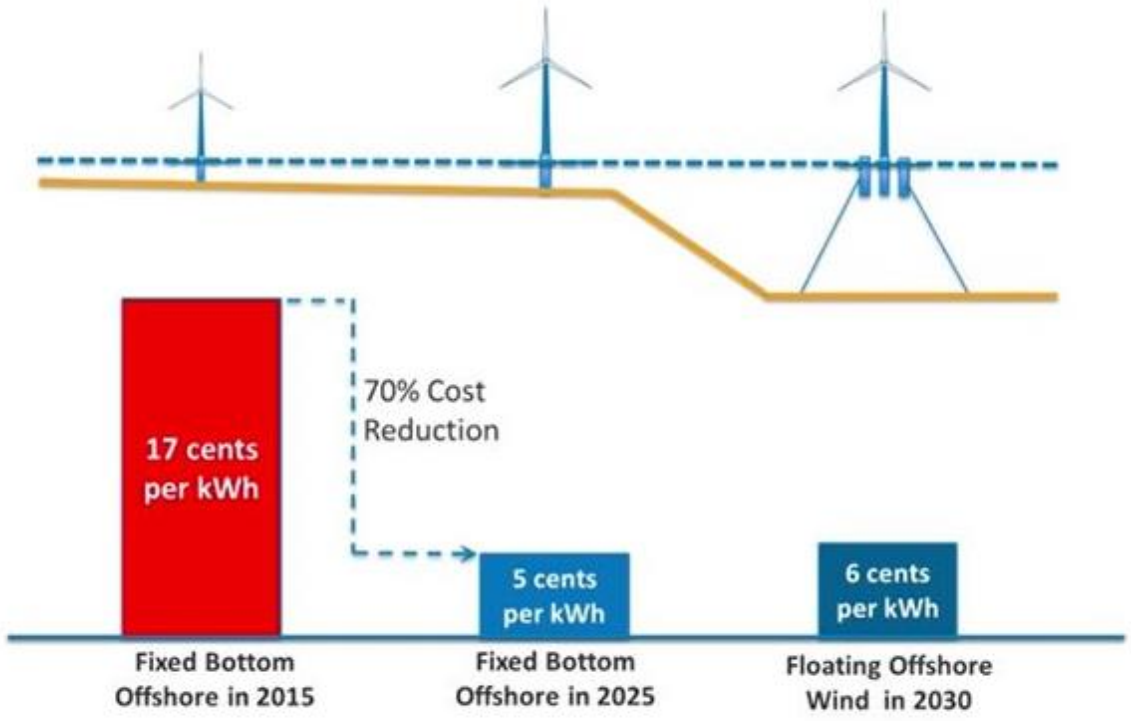


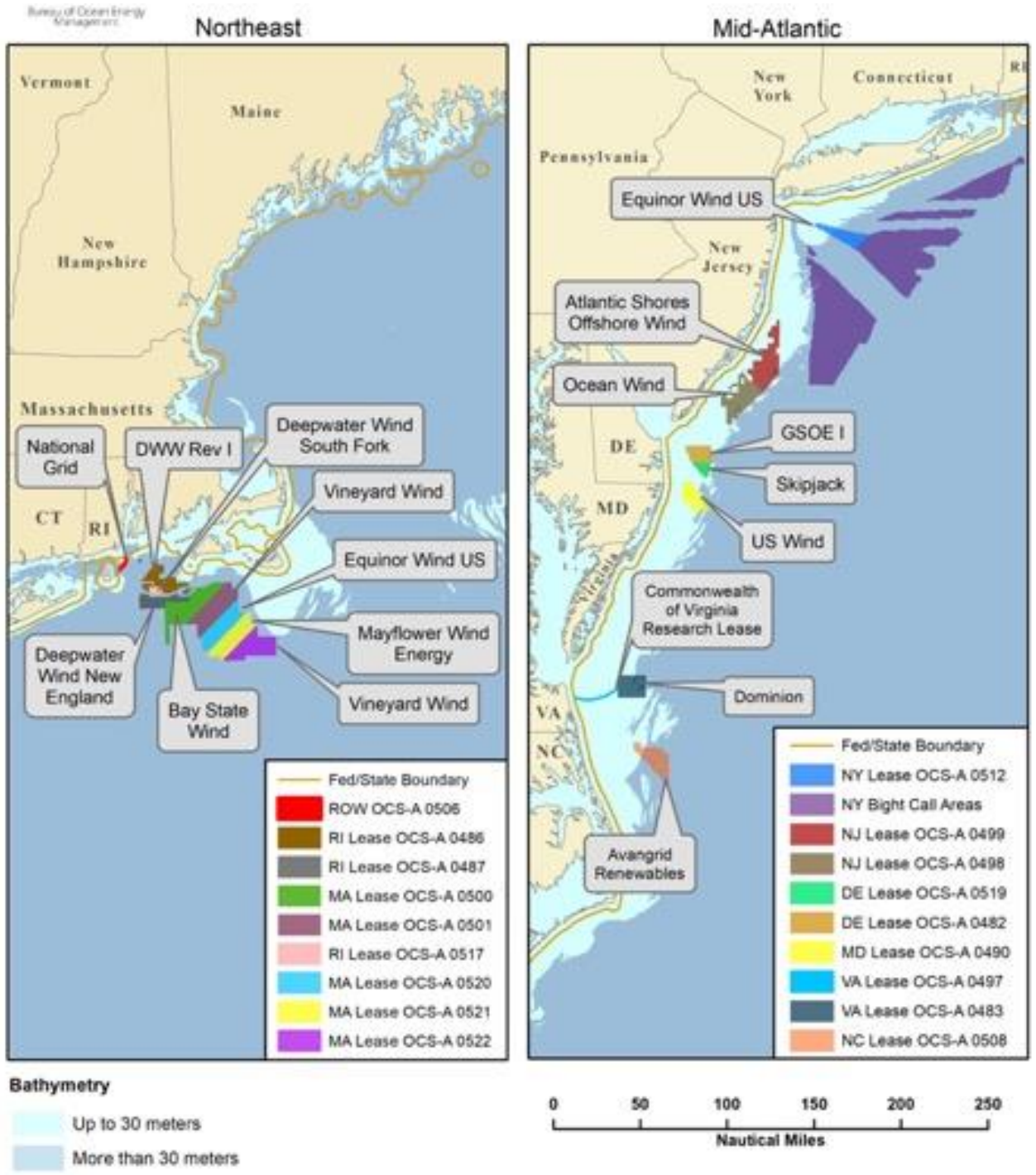
Figure credit: NREL

- Shared supply chains
  - Turbines
  - Array and export cables
  - Regulations
  - Ports and Infrastructure
  - Operations and Maintenance
- Floating cost reductions lag fixed-bottom offshore wind cost by 5 -7 years
- Floating cost are likely to converge with fixed-bottom wind

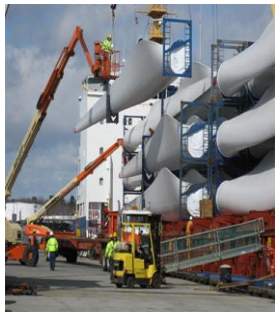
NREL | 3

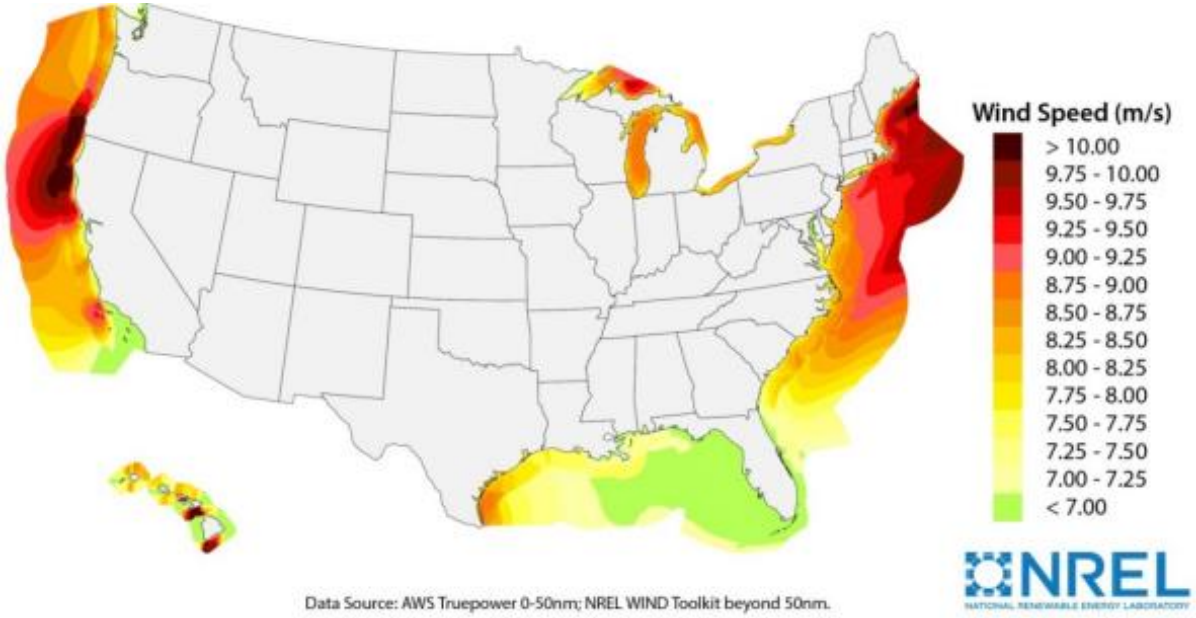
Growth of Offshore Wind in the U.S.

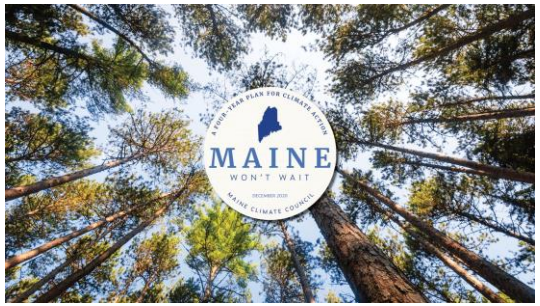
	State target (MW)	MW selected (offtake)
Massachusetts	3,200	1,600
Rhode Island	430	430
Connecticut	2,000	1,100
New York	9,000	1,826*
New Jersey	7,500	1,100*
Maryland	1,200	368
Virginia	5,200	2,652
Total	**28,530**	**9,076**



Offshore Wind in Maine







Maine's Approach to Offshore Wind

- Measured and deliberative
- Answering questions and exploring opportunities
- Regional coordination and partnerships
- Commitment to listen and engage with stakeholders

Maine Offshore Wind Initiative

- Pursues strategic opportunities for additive economic activity and innovation across various sectors and regions of Maine
- Maximize compatibility with existing marine uses and fisheries and take a data-driven, inclusive, transparent approach
    - Maine fisheries: $674M in Maine's commercial fishing landings in 2019 ($485M in lobster landings alone, most valuable single species fishery in US); 2X commercial fishing trips out of Maine than any other state on the east coast
- Support Maine engagement in BOEM Task Force and regional coordination

Maine's Floating Offshore Wind Roadmap

October 2020

US EDA Grant: $2.167 million for a strategic roadmap to develop offshore wind industry in Maine, focusing on:

- Ports and infrastructure
- Manufacturing, supply chain, workforce
- Innovation
- Research array and research priorities
- Ocean and environmental data
- Stakeholder engagement

Gulf of Maine Intergovernmental Task Force & BOEM Process

- Federal/Tri-State Task Force (ME, NH, MA) to inform federal offshore decisions
- Maine joined Task Force in 2019
- December 12, 2019 inaugural meeting
- Focus on commercial leasing for one or more large scale leases

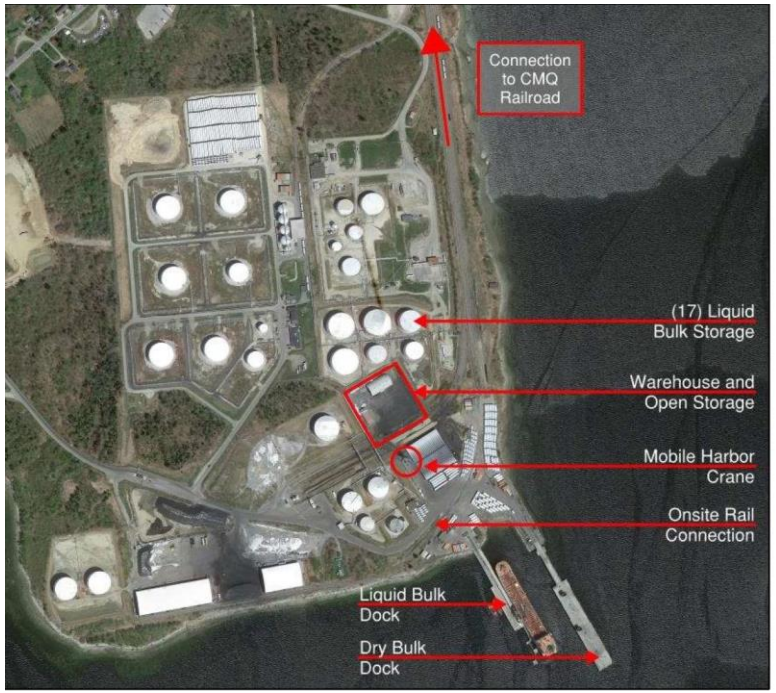
Planning & Analysis	Leasing	Site Assessment	Construction & Operations
~ 2 YEARS	~ 1-2 YEARS	UP TO 5 YEARS	~ 2 YEARS (+25)
• Intergovernmental Task Force • Request for Information or Call for Information and Nominations • Area Identification • Environmental Reviews	• Publish Leasing Notices • Conduct Auction or Negotiate Lease Terms • Issue Lease(s)	• Site Characterization • Site Assessment Plan	• Construction and Operations Plan • Facility Design Report and Fabrication and Installation Report • Decommissioning • Environmental and Technical Reviews

Port Infrastructure and Market Potential Assessment: Searsport

- In March 2020, Governor Mills identified the Port of Searsport as a site to support the transportation, assembly and fabrication of offshore wind turbines and called for a study to further analyze the opportunity.

- Will outline options and investments required to maximize existing port assets.

- ***US Offshore Wind Study: $70 Billion Supply Chain Opportunity***

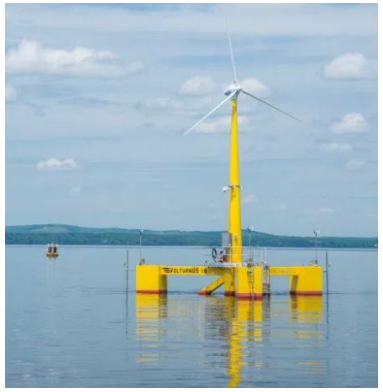


GOVERNOR'S Energy Office

Maine Offshore Wind Projects

2013

1/8 Scale Pilot Project - 1 turbine (Castine – UMaine, Cianbro, MMA)



2023

10 MW Demonstration Project - 1 turbine (Monhegan – NEAV LLC, UMaine)

2025+

Research Array - 12 turbines or less

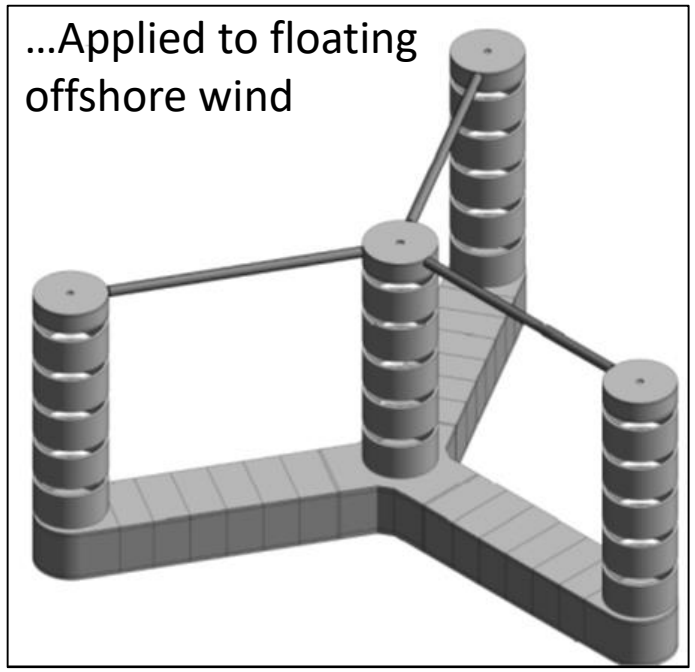
(State, UMaine, NEAV LLC)

TBD*

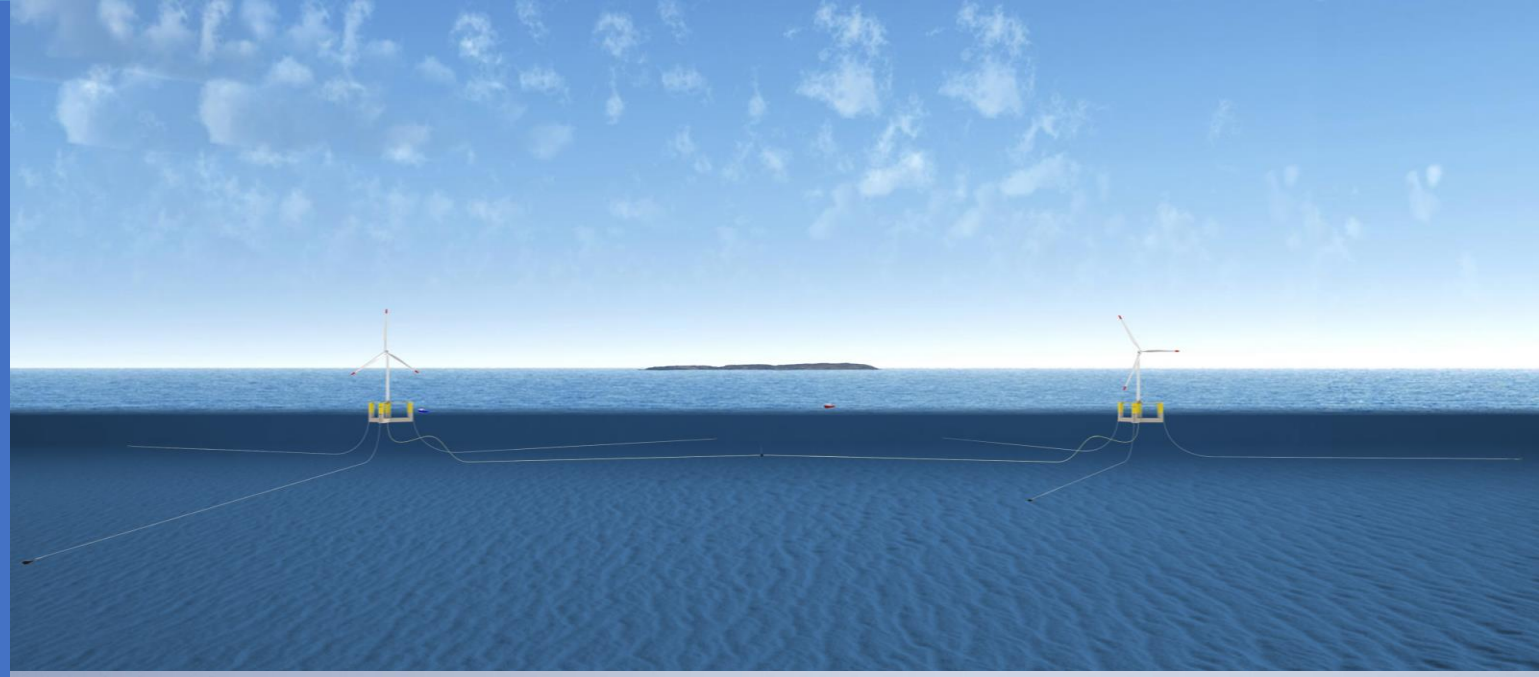
Commercial Development - BOEM Leasing and Permitting

University of Maine Technology
Optimized for Maine

- Can be built in Maine
  - Concrete / not steel
  - Modular construction
  - Creates jobs in Maine
- Fits Maine's waters
  - Suited for mid-depth waters
  - Very stable & shallow draft



Offshore Wind Research Array



Research Array By the Numbers

12 floating turbines or fewer

16 square miles or smaller

State of Maine

- Governor's Energy Office (lead)
- Department of Marine Resources
- Governor’s Office of Policy Innovation and the Future
- Department of Inland Fish and Wildlife
- Department of Environmental Protection
- Department of Economic and Community Development
- Consensus Building Institute (Consultant – Facilitator)

New England Aqua Ventus

- Diamond Offshore Wind/RWE Renewables

University of Maine

- Technology

Federal Agency and MA/NH State Agency Coordination

Who is Involved?

Preliminary Project Timeline

Listening and Adapting

In response to fishing industry concerns, Gov. Mills announced the following:

- Support for 10-year moratorium on new offshore wind in **state waters**
- Additional time for planning and discussion, prior to lease application
- A review of applicable state laws

Siting Criteria

Initial Siting Criteria

20-40 statute miles offshore

150 feet of water or deeper

Southern half of ME interconnect

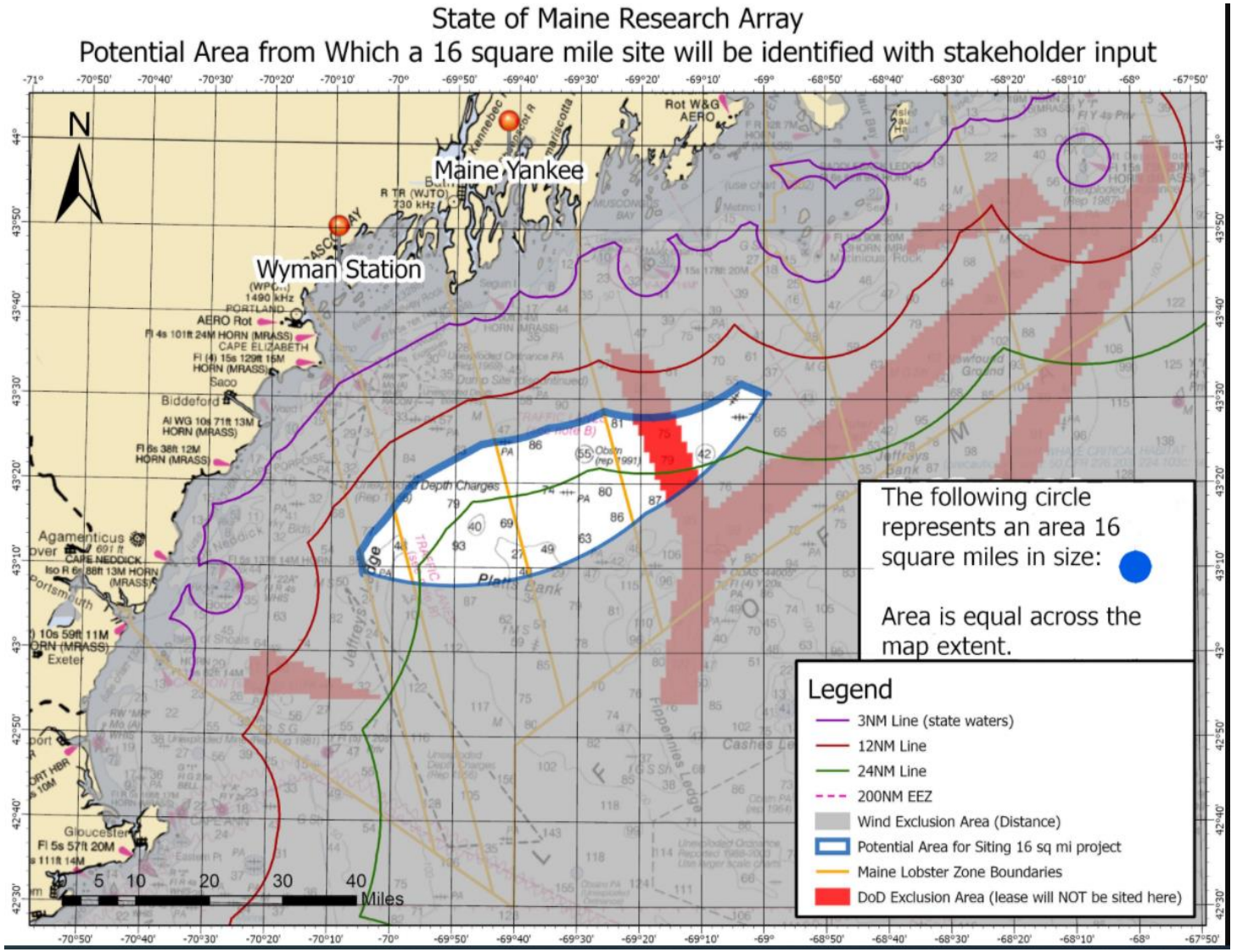
Bottom type gravel and/or mud

Minimal conflicts with known fishing grounds

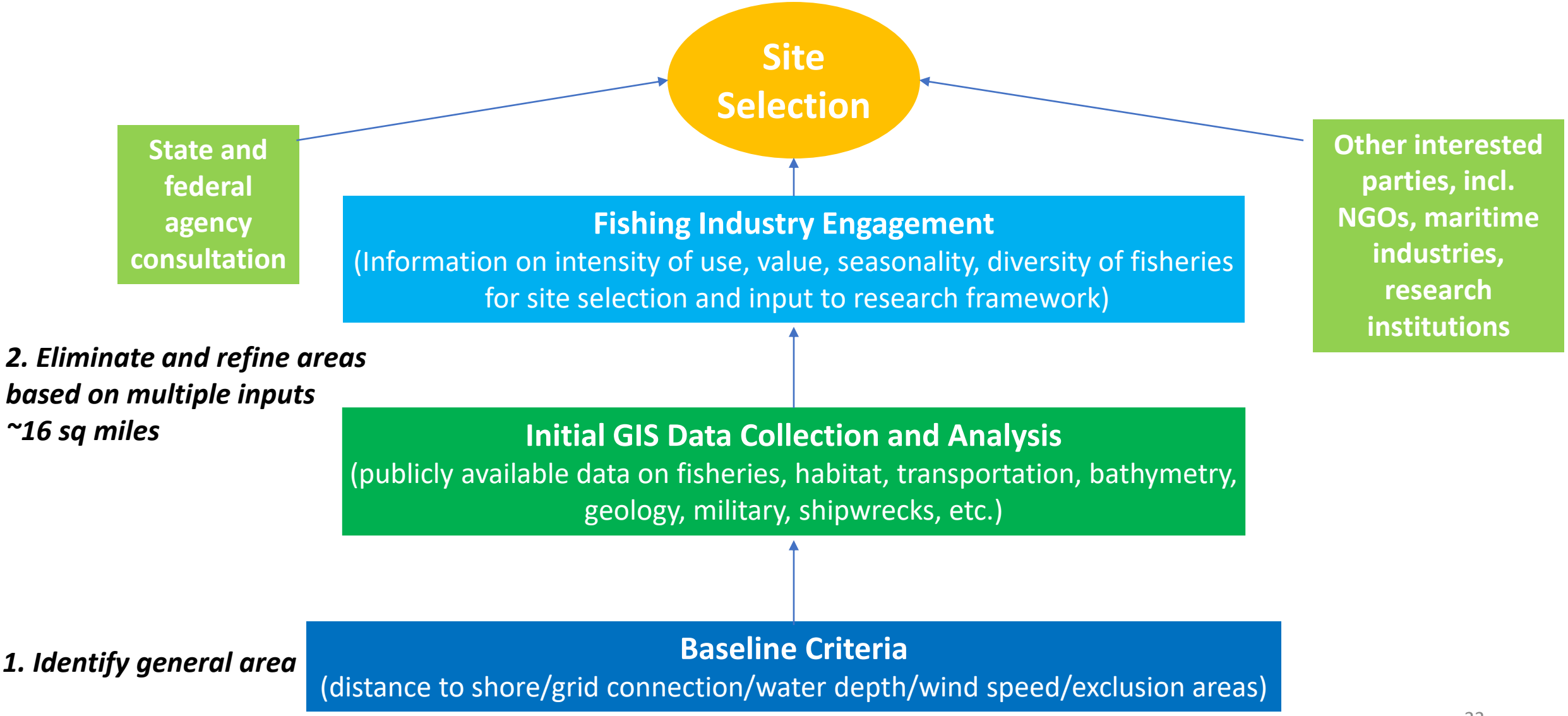
Avoid highly trafficked areas

Limit visibility from shore

Research Array General Area of Interest



Site Selection Process



Research Approach

Research Approach

- Research is the key driver for the array.
- Research objectives will inform:
  - Siting process and decision
  - Project design, layout and operations

Overall research process:

- Key themes in initial application
- Further develop research approach through roadmap effort
- Stand up formal consortium, with diverse interests at the table
- Seek broad funding opportunities
- Open source data

Research Approach

- Environment and ecological interactions
- Interactions with fishing activity
- Navigation
- Technology research and demonstration, including mooring systems
- Workforce education and training
- Others?

Maine Research Array Process

2021

Research Array Process Elements

State of Knowledge Workshop	• Setting stage • Building common information
Webinars	• Build understanding across sectors
Work Sessions	• Detailed dialogue on data, siting, and research approach
Dockside and Informal	• Direct engagement with fishermen • Direct engagement with interested others
Joint workshops	• Coordinating and refining advice from wildlife, fisheries and other

For information:

www.maine.gov/energy/initiatives/offshorewind

Questions?

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How Do I Stay Informed?