

ASMFC LNG & Renewable Energy Workshop
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Considerations for Fisheries & Habitat Conservation During State Permitting



Vin Malkoski
Senior Marine Fisheries Biologist



LNG & Renewable Energy projects are similar to other energy/construction projects:

- ▶ There is often little comprehensive, site-specific data on resources, habitat, and habitat functions and values
- ▶ Often little desire to collect these data
- ▶ Same types of construction impacts
- ▶ Operational Impacts
- ▶ Cumulative Impacts



LNG & Renewable Energy Projects do have common differences from other projects:

- Mostly proposed for Public Trust waters/lands
- May be driven by political forces – tax credits, generation portfolios, “streamlining”
- May have accelerated review schedules - DWPA
- Often result in exclusion of user groups due to configuration or security concerns
- FERC regulations may trump other considerations
- There is a common belief that the “end” (renewable energy) justifies the “means” (greater direct impacts)



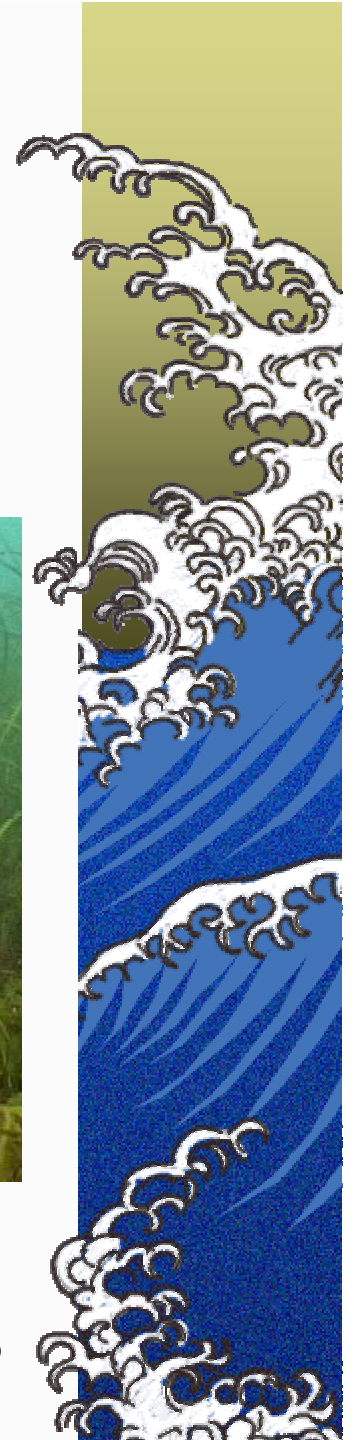
Environmental Regulations

- ***US ACOE***
 - *Section 10 of the Rivers and Harbors Act*
 - *Section 404 of the Clean Water Act*
 - *Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972*
 - *Regional conditions placed on the nationwide general permit*
- ***Clean Water Act***
 - *NPDES*
- ***Wetlands Protection Act***
- ***Endangered Species Act***
- ***State Wetlands & Waterways Regulations***
- ***Regional and local bylaws***



Goals of the Habitat Conservation Program:

- *Seek to avoid impacts to fisheries resources and habitat*
- *Minimize impacts through project modifications, sequencing, and time-of-year-restrictions*
- *Seek restoration of habitat for impacts*
- *Recommend options for compensatory mitigation.*



Resource Concerns

- ▶ State responsibilities often exceed the requirements of EFH and ESA listed species.
- ▶ Will include ASMFC and locally managed species such as river herring, lobster, and shellfish
- ▶ May include habitat types of concern such as SAV, mud flats, or other intertidal areas
- ▶ All life-stages of multiple species may be at risk from a single project
- ▶ Changes in community structure
- ▶ Potential impacts to multi-state species



Physical and Oceanographic Concerns

- ▲ Changes in water flow and sediment transport
- ▲ Water withdrawal
- ▲ Increased temperature
- ▲ Addition of toxic materials – drilling muds, anti-fouling agents, biocides,
- ▲ Increased risk of collision
- ▲ Decreased rescue capability
- ▲ Loss/reduction of traditional fisheries
- ▲ Loss/reduction of public access



Short Term Impacts

Generally from
Construction Activities:

- Pile driving & jetting
- Dredging
- Operation of equipment on resource area
- Introduction of pollutants

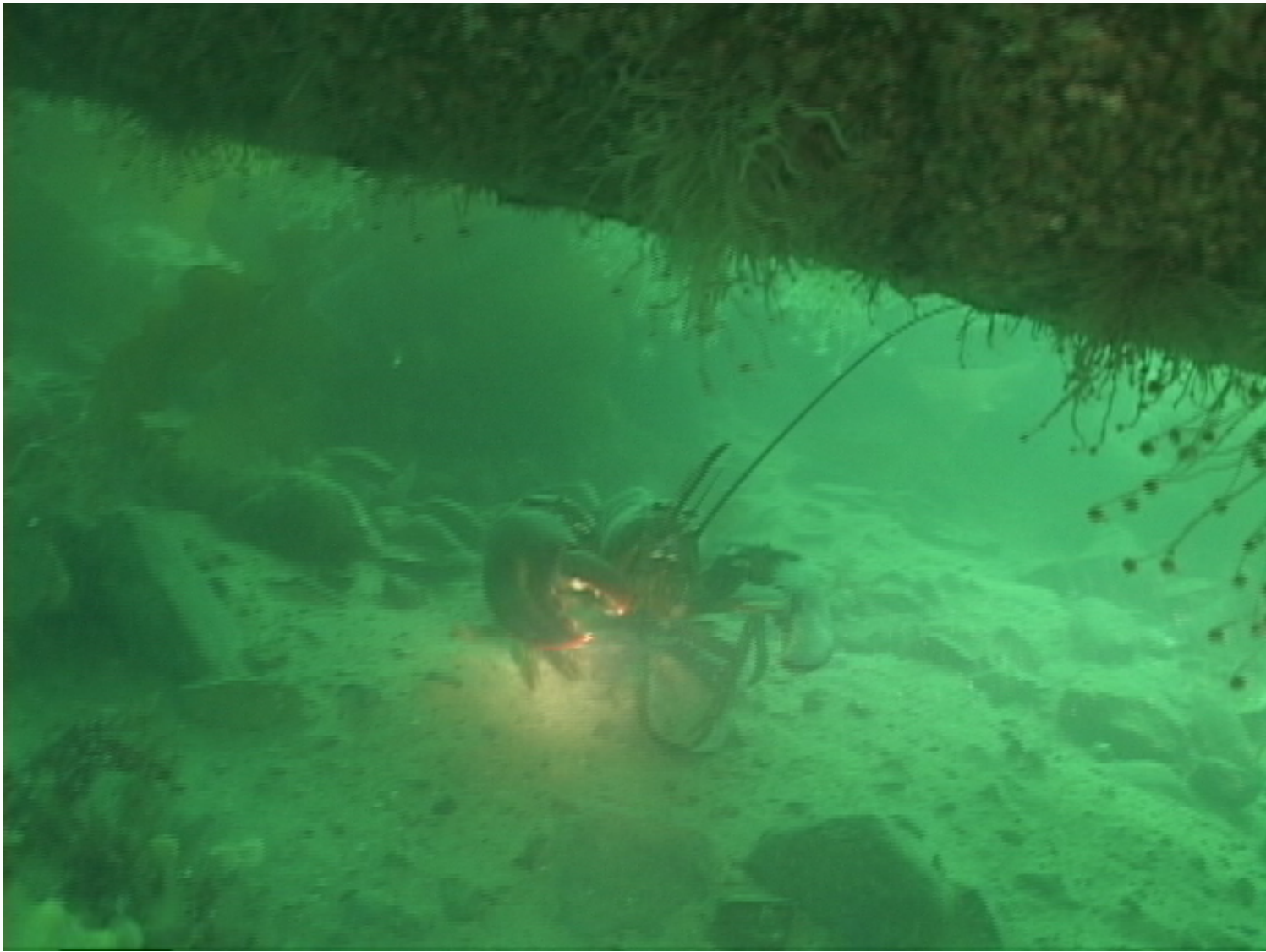




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Division of Marine Fisheries

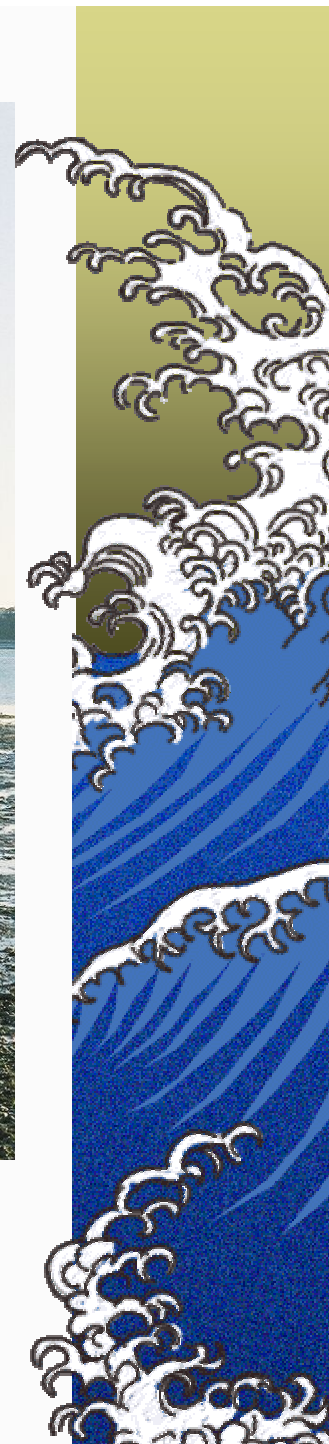
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Long Term Impacts

- Physical loss of habitat area
 - Removal – dredging or excavation
 - Direct Fill – pilings, scour protection
 - Failure of scour protection
 - Prop dredging
- Functional loss of habitat
 - Loss of native stock
 - Changes in water flow and sediment transport
 - Introduction of chemical substances
 - Temperature increases
- Entrainment of eggs and larvae





Undefined and/or Disputed Impacts

- Sub-lethal and developmental
- Noise
- Electromagnetic
- Turbidity & Sedimentation
- Cumulative / Additive



POINT SOURCE POLLUTION & HAZARDOUS WASTE SITES AROUND BOSTON HARBOR



Legend

- Indust. Facil. Dischrg.
- Superfund Natl. Priority
- Haz./Solid Waste Sites
- ◆ Toxic Release Invent.
- ▲ MA Disposal Sites
- Hubline Gas Pipeline

Outfall Points

- Combin. Sewer Overflow
- MWRA Effluent Outfalls
- MWRA Diffusers
- NPDES Major Outfalls

Coastal Infrastructure

- Cable Area
- Disposal
- Pipeline Area
- Sewer Line
- Tunnel

Graphic provided by Mike Johnson, NMFS, Gloucester, MA



TYPES OF ACTIVITIES IMPACTING MARINE RESOURCES IN BOSTON HARBOR



Graphic provided by Mike Johnson, NMFS, Gloucester, MA



Cumulative Impacts

“Because there are no commercial scale wind generation facilities in Nantucket Sound, there will be no cumulative impacts from the construction and operation of the Cape Wind project.”

Cape Wind DEIS



Minimization of Impacts

- TOY restrictions
- Project Sequencing
- Temporary removal of resource
- Alternative construction techniques
- Use of silt curtains, booms, coffer dams
- Operation and Maintenance Plan



	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	# of Months	Work Dates	
														Agency	Algonquin
HDD Dredge	[Blue bar from Sep-02 to Aug-03]												8	May 15 - Jan 15	
Waters River/Beverly Harbor	[Green bar from Sep-02 to Dec-02]												4		Sept 1 - Jan 1
Beverly Harbor	[Green bar from Jan-03 to Apr-03]												4		Jan 1 - May 1
Weymouth Fore River	[Green bar from Sep-02 to Dec-02]												4		Sept 1 - Jan 1
Georges Island	[Green bar from Jan-03 to Apr-03]												4		Jan 1 - May 1
Deer Island	[Green bar from Feb-03 to Apr-03]												3		Feb 1 - May 1
Blasting	[Blue bar from Nov-02 to Feb-03]												3	Nov 1 - Feb 15	
	[Green bar from Oct-02 to Nov-02]												8 weeks		Oct 7 - Dec 1
Pipe Lay	[Blue bar from Sep-02 to Aug-03]												12	None	
	[Green bar from Sep-02 to Apr-03]												6		Nov 1 - Apr 31
Plow/Jet/Backfill															
Nearshore < 40'	[Blue bar from Oct-02 to Mar-03]												5	Oct 15 - March 15	
20' < Nearshore < 40'	[Orange bar from Mar-03 to Apr-03]												2		Extended window
Nearshore < 20' (Incl. Dredging)	[Green bar from Oct-02 to Mar-03]												5		Oct 15 - March 15
Deep Water > 40'	[Blue bar from Nov-02 to Apr-03]												6	Nov 1 - Apr 30	
Deep Water > 20'	[Green bar from Nov-02 to Apr-03]												5.5		Nov 7 - Apr 15
Imported Backfill	[Green bar from Feb-03 to May-03]												3.5	Feb 15 - May 31	Feb 15 - May 31
Hydrostatic Testing (Weymouth Fore River)	[Blue bar from Dec-02 to Feb-03]												6	June 1 - Aug 30,	
	[Green bar from May-03 to Jun-03]												3 weeks	Dec 1 - Feb 15	May 15 - Jun 1
Tie-Ins, Including backfill	[Green bar from May-03 to May-03]												1	May 1 - May 31	May 1 - May 31

Legend:

[Blue bar]	Agency Work Windows
[Green bar]	HubLine Proposed Work Windows
[Orange bar]	Agency Work Window Extensions

NOTE: WEATHER CONTINGENCY NOT INCLUDED

Agency Work Windows	Algonquin Work Windows
<p>HDD/Dredging Recommend a work window of May 15 to Jan 15 of any year. Allows 8 months of in water activity. Phrase as "Dredging Associated with HDD"</p> <p>Hydrostatic Testing For over run: No work Sept - Nov No work March 1 - May 31: out migrating smelt</p> <p>Plowing/Jetting/Backfill For both jetting and plowing, follow the near shore and deep water windows Nearshore: Sep 1 - Feb 15 (5.5 months) Deep Water: Nov 1 - Apr 30 (6 months)</p> <p>Pipe Lay and Blasting No time of year recommended right now</p>	<p>HDD/Dredging Entry/exit holes to be dredged near start of HDD and upon completion of HDD No dredging except at entry/exit holes, holes to remain open during drilling</p> <p>Hydrostatic Testing Final test upon completion of tie-ins on mainline, final test of lateral before tie-in Minor hydrotest work at each HDD during HDD work</p> <p>Plowing/Jetting/Backfill Nearshore/Deepwater split dependent on construction methods. Schedule based on 20' contour split due to need for dredging vs plowing Change to 40' contour adds 11.5 miles to "nearshore".</p> <p>Pipe Lay and Blasting Blasting will extend through November, depending upon number of bedrock locations identified. Pipe lay for HDDs may occur as late as 4/03.</p>



Restoration

- Physical restoration of disturbed habitat
 - In-kind, in-place
- Replanting of resource
- Restoration of adjacent habitat
- Monitoring of restoration efforts
- Contingency plans



Compensatory Mitigation

Potential Source of Impact	Habitat Area Affected	Species Affected	Minimization Strategy	Monitoring Options	Mitigation options
Construction					
Direct construction impacts to habitat and resources	Benthic	Lobster, cod, shellfish, urchins	Routing of pipeline, TOY to avoid resources, construction technique	Habitat Recovery, Direct resource surveys	Restoration, recovery-driven compensation
Loss of habitat due to permanent structures	Benthic	Lobster, cod, shellfish, urchins	Reduce structure to minimum necessary, siting	Post-construction surveys	Compensation paid for life of facility- DWPA fees
Loss of access due to structures and safety zones	Benthic & Pelagic	Lobster, cod, shellfish, urchins	Siting of deep water port	None	DEP Occupation fee; Compensation paid for life of facility
Potential for spills, operational problems, equipment failure, etc.	Pelagic	All	Operational BMPs	Visual, vessel instruments	Incident-specific compensation for clean-up and penalty
Operation					
Increased potential for ship strikes	Pelagic	Mammals	Observers & transit BMPs, TOY limits & vessel speed restrictions	Vessel-based observers, passive acoustic monitoring, aerial observation	Compensation for take - species dependent
Entrainment mortality	Pelagic	All	Structural to reduce entrainment, TOY limits/restrictions	Entrainment monitoring of intake, local area plankton sampling	Compensation paid for life of facility
Mooring cable sweep	Benthic	Lobster, shellfish	Use of mooring technologies that minimize sweep	Directed surveys - Remote sensing due to depth	Compensation paid for life of facility
Potential for spills, operational problems, equipment failure, etc.	Pelagic	All	Operational BMPs	Visual, vessel instruments	Incident-specific compensation for clean-up and penalty



Compensatory Mitigation

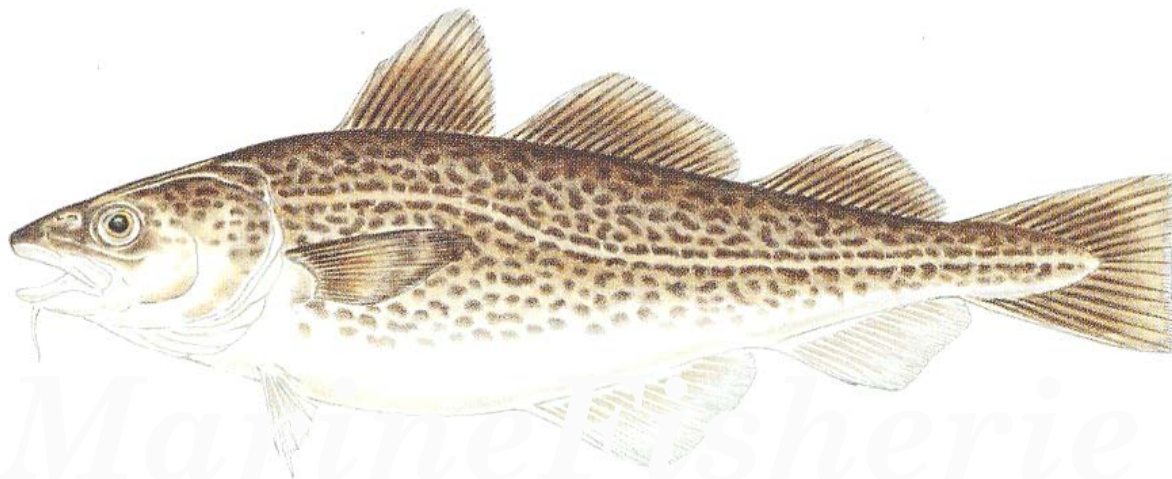
DWPA User Fee and Compensatory Mitigation Projects & Studies

Options	Estimated Cost	Comments
Post-construction restoration and recovery monitoring		
Area-specific tied to habitat impacts and recovery	N/A	<ul style="list-style-type: none"> Restoration and monitoring programs developed during permitting. Activities and compensatory mitigation to be funded by the Applicant
Impact Avoidance		
Installation and operation of a near-real time passive acoustic array	\$1.7 million – Year 1 \$630,000 – Annual operation & maintenance	<ul style="list-style-type: none"> The area in and around the NEG site lie within one of the highest cetacean use areas along the eastern coast of the U.S, particularly for the endangered right whale. Current large vessel traffic use is high (≈1,000 trips per year) will increase by 21-24% if the DWP is constructed and operated, markedly increasing the chances of a ship strike Current technology will permit near real time monitoring and communication, which will aid in directing traffic around whales in the TSS.
Impact Mitigation		
Acoustic & Optical Surveys of Pipeline Pathway	\$55,000 / year	<ul style="list-style-type: none"> High-resolution studies of coverage and habitat recovery along the HubLine route provide an independent assessment of habitat recovery and supply valuable data for use in the evaluation of future projects.
Evaluation of sound generation and intensity relative to the gas transport operation of the DWP using benthic acoustic monitors.	\$150,000 to \$200,000 / year	<ul style="list-style-type: none"> Little data exists regarding the effects of noise generated by the operation of an LNG pipeline on fish/invertebrate behavior and habitat use. Acoustic monitors will be placed in transects along the pipe and adjacent areas to measure sound generation
Ichthyoplankton surveys in Greater Massachusetts and Cape Cod Bays	\$900,000 / year	<ul style="list-style-type: none"> The NEG site lies with EFH for numerous important species (e.g., Atlantic cod, haddock, and yellowtail flounder) and adjacent to known spawning grounds such as the MA cod Conservation Zone. Ichthyoplankton abundance estimates reported in the DEIS as taken from NOAA MARMAP and ECOMON data sets cannot be considered a spatially or temporally comprehensive measurement of conditions within the proposed DWP due to sampling limitations. Estimates of entrainment mortality based on these data sets likely underestimate the impact of vessel operation.
Assessment of lobster larvae abundance and distribution in Massachusetts Bay	\$175,000 / year	<ul style="list-style-type: none"> Lobster landings from Massachusetts Bay are at a 25-year low Lobster abundance in DMF RAP survey near 25-year low Virtually no data exist regarding the relative abundance and distribution of lobster larvae in coastal waters Estimates of larval mortality in the NEG DEIS and other documents are not supported by comprehensive or relevant data and



DMF Website:

<http://www.mass.gov/marinefisheries>



A Commonwealth of Massachusetts Agency

