

# **Revolution Wind Fisheries Exposure Analysis - Massachusetts**

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# Revolution Wind Fisheries Exposure Analysis

Quantitative and data-driven approach

NOAA data on commercial landings for 2008-2019 for Rev WLA, WTGA +5km buffer, and ECC

Adjusted for lobster/Jonah crab unreported landings and dockside sales (RI)

For-hire charter fishing revenue at WLA estimated from 2022 charter captain survey

Indirect and induced impacts in Massachusetts estimated via multipliers (I/O model)

Exposure of fisheries values estimated based on likely impacts to fishing during

Construction

Operations

Decommissioning

# Rev Wind project areas

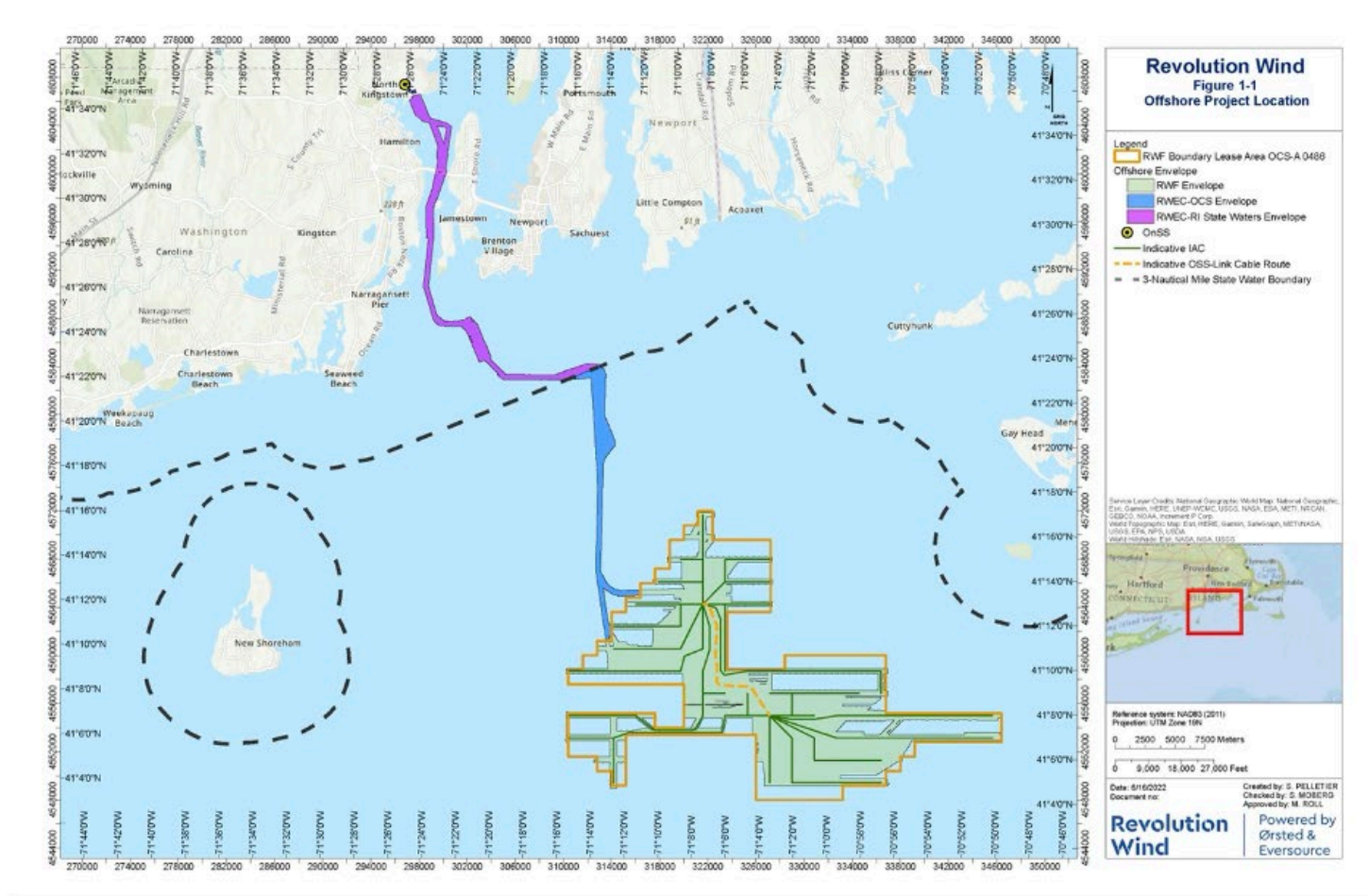


Figure 1. Revolution Wind project area and export cable route. Source: Revolution Wind.

# NOAA baseline data

Average of 11 years of NOAA data (2008-2019) on commercial landings by weight and value from the Wind Lease Area (WLA) and Export Cable Corridor (ECC)

(ECC defined as two 180m lanes)

Updated NOAA dataset uses federal Vessel Trip Report (VTR) and clam logbook fishing trip data with observer data

Major species: Lobster, scallops, monkfish (WLA); Lobster, herring, squid, flounder (ECC)

Major gear types: bottom trawls, pots, gillnets, and dredges (WLA)

Table 7a. Average annual landings from Revolution WLA by state.

State	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Rhode Island	592,816	705,478	139,434	203,746
Massachusetts	475,849	668,182	181,263	418,179
Others	42,855	35,463	--	--

Table 7b. Average annual landings from Revolution ECC by state.

State	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Rhode Island	75,858	131,252	15,808	52,728
Massachusetts	15,508	82,018	9,096	88,402
Others	3,140	5,666	--	--

# Indirect and induced economic impact

*Table 12. Estimated annual economic impact in Massachusetts (all values in 2020\$)*

Area	State	Average value of landings/year			Total impact/year “dockside sales” column multiplied by upstream & downstream multipliers, except RI lobster & JC
		VTR data only (Table 11, row 1)	with lobster & Jonah crab adjustment	with dockside sales adjustment (15% premium on RI lobster & JC landings)	
Revolution WLA	total	1,111,520	1,463,527	1,510,461	3,206,170
Revolution ECC	total	94,506	122,415	128,015	267,483
Revolution WLA	MA	475,849	626,545	626,545	1,381,532
Revolution ECC	MA	15,508	20,088	20,088	44,293

# For-hire charter fishing survey (2022)

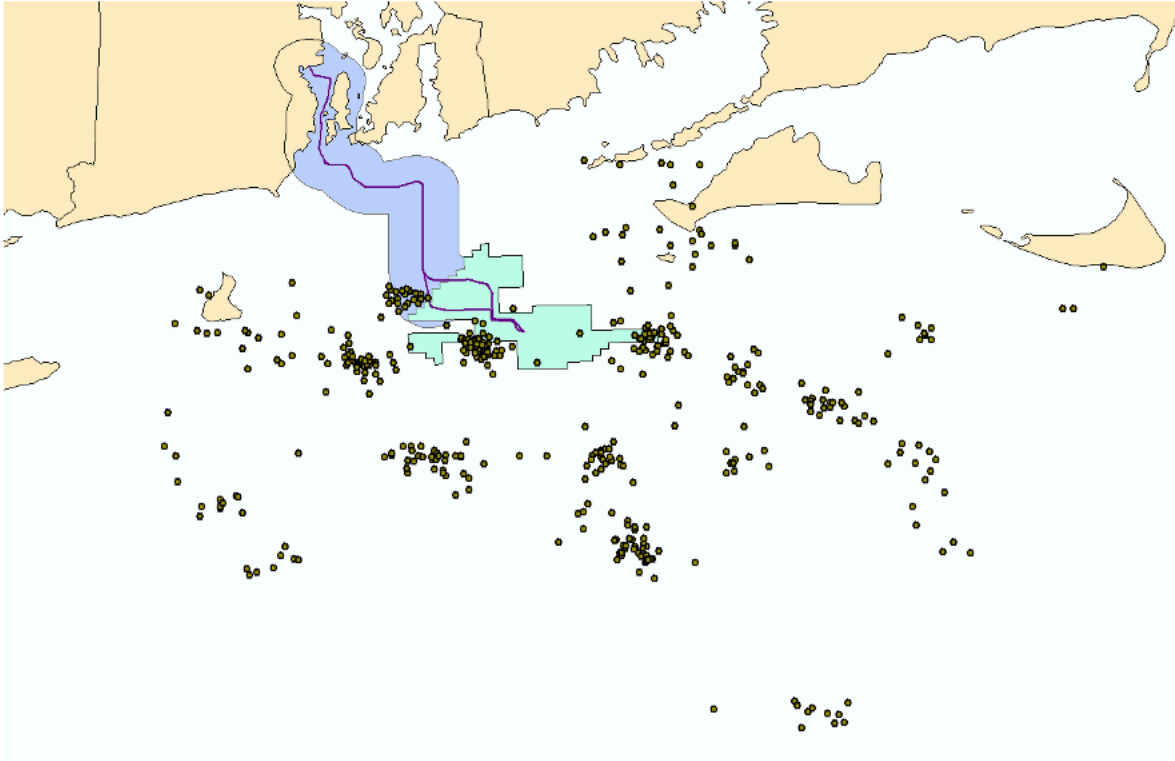


Figure 4. Charter fishing locations, 2017-2021, identified in survey responses.

Table 17. For-hire charter fishing survey summary statistics.

Description	Number
Fished in the area and responded to the survey	66
Provided vessel names	62
of which based in Massachusetts	37.5
Provided annual vessel trip numbers	31
Observations with vessel trips reported (2017-2021)	142
Total trips per year	1 – 235
Average total trips per year	47.30
Passengers per vessel trip	2 – 25
Average passengers per vessel trip	5.41
Identified fishing locations on maps	29
of which based in Massachusetts	18.5

# Charter fishing baseline

Table 18. Number of MA-based vessel trips and anglers by year, Revolution Wind areas.

Year	WLA		WTGA + 5km buffer	
	Vessel Trips	Anglers	Vessel Trips	Anglers
2017	7	20	43	774
2018	6	24	46.5	897
2019	65	1,108	21	45
2020	7.5	35	14.5	73
2021	21	91	27	123
<b>Average</b>	<b>21.3</b>	<b>255.6</b>	<b>30.4</b>	<b>382.4</b>

Table 21. Annual revenue and value generated from MA-based charter fishing in Revolution Wind areas.

Area	Annual anglers	Revenue per angler (2020\$)	Scale factor	Annual revenue (2020\$)	Economic multiplier	Annual value generated (2020\$)
WLA	255.6	106.22	Low: 2.027	55,033	1.627	89,538
			High: 3.269	88,753	1.627	144,401
WTGA+5km	382.4	106.22	Low: 2.027	82,334	1.627	133,957
			High: 3.269	132,782	1.627	216,036
ECRA	150.0	106.22	Low: 2.027	32,296	1.627	52,546
			High: 3.269	52,085	1.627	84,742

# Summary of baseline economics in Massachusetts

## Commercial fishing:

Massachusetts landings from WLA and ECC:	\$647,000/year
Massachusetts landings with multipliers:	\$1,426,000/year

## For-hire charter fishing:

Massachusetts revenue from WLA and ECC:	\$133,000/year
Massachusetts revenue with multipliers:	\$216,000/year



# Rev Wind development exposure assumptions

Table 14. Assumptions for exposure of commercial fisheries to wind farm development.

Categories of Potential Exposure			Assumptions/Effects	Duration
Availability effects due to construction	WTGA+5km		100% of finfish leave area (a)	1 year
	WLA		Lobster/crab landings reduced 10% (b)	1 year
			Other shellfish landings reduced 10% (c)	4 years
	ECRA	1.6km WA	All landings reduced 10% (d)	1 year
		180m ECCs	Lobster/crab landings reduced 25% (e) Other shellfish landings reduced 25% (f)	1 years 4 years
Construction constrained access	WLA		No fishing in 50% of area (g)	1 year
	ECRA	1.6km WA	No fishing in 5% of area (h)	6 months
		180m ECCs	No fishing in 100% of area (i)	2 months
Effects during operations	WLA		Landings reduced by 5% (j)	30 years
	ECRA	1.6km WA	None	
		180m ECCs	None	
Availability effects due to decommissioning	WLA		None beyond constrained access	
	ECRA	1.6km WA	All landings reduced 5% (k)	1 year
		180m ECCs	Lobster/crab landings reduced 12.5% (l) Other shellfish landings reduced 12.5% (m)	1 year 4 years
Decommissioning constrained access	WLA		No fishing in 50% of area (n)	1 year
	ECRA	1.6km WA	No fishing in 5% of area (o)	2 months
		180m ECCs	No fishing in 100% of area (p)	2 months

(a), (b), (c) etc. refer to detailed explanations in the text that follows

# Exposure due to construction effects

Pile driving scheduled for < 9 months

Assume finfish leave when noise exceeds 160 dB: 5km buffer around WTGA

Assume shellfish mortality at 219 dB / 24 hours: 160m radius around turbine towers < 2.5% of WLA

Availability effects due to construction	WTGA+5km		100% of finfish leave area (a)	1 year
	WLA		Lobster/crab landings reduced 10% (b) Other shellfish landings reduced 10% (c)	1 year 4 years
	ECRA	1.6km WA	All landings reduced 10% (d)	1 year
		180m ECCs	Lobster/crab landings reduced 25% (e) Other shellfish landings reduced 25% (f)	1 years 4 years
Construction constrained access	WLA		No fishing in 50% of area (g)	1 year
	ECRA	1.6km WA	No fishing in 5% of area (h)	6 months
		180m ECCs	No fishing in 100% of area (i)	2 months

# Exposure during operations

Mobile gear (bottom trawl, scallop dredge) accounts for about half of landed value from WLA

100m radius around turbine towers < 1% of WLA footprint

Effects during operations	WLA		Landings reduced by 5% (j)	30 years
	ECRA	1.6km WA	None	
		180m ECCs	None	

# Exposure due to decommissioning

Similar to construction but less severe (no pile driving)

Availability effects due to decommissioning	WLA		None beyond constrained access	
	ECRA	1.6km WA	All landings reduced 5% (k)	1 year
		180m ECCs	Lobster/crab landings reduced 12.5% (l) Other shellfish landings reduced 12.5% (m)	1 year 4 years
Decommissioning constrained access	WLA		No fishing in 50% of area (n)	1 year
	ECRA	1.6km WA	No fishing in 5% of area (o)	2 months
		180m ECCs	No fishing in 100% of area (p)	2 months

# Potential exposure of Mass. fishing to Rev Wind

Categories of Potential Exposure		MA Direct Landed Value/Revenue (2020\$)
Construction-related effects	WLA+	\$713,000
	ECRA	\$12,000
Effects during operations	WLA	\$377,000
	ECRA	---
Decommissioning-related effects	WLA	\$57,000
	ECRA	\$1,000
<b>Subtotal MA commercial direct effects</b>		<b>\$1,160,000</b>
For-hire charter fishing direct effects		\$133,000
<b>Total MA direct effects</b>		<b>\$1,293,000</b>

Categories of Potential Exposure	MA Total Impact with Multipliers (2020\$)
Subtotal MA commercial fishing	\$2,559,000
For-hire charter fishing	\$216,000
<b>Total Massachusetts impacts</b>	<b>\$2,775,000</b>