On-Demand Fishing Gear Conflict Working Group

New England Fishery Management Council
July 23, 2025
Webinar

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Introductions

Michael Pierdinock (NEFMC; Chair)
Ted Platz (NEFMC; Vice-Chair)
Terry Alexander (Mobile Gear/Gillnet)
Spencer Bode (Mobile Gear)
Erica Fuller (Conservation Law Foundation)
Jennifer Goebel (GARFO Protected Resources)
Sonny Gwin (MAFMC; Gillnet)
Toni Kerns (ASMFC)
Henry Milliken (NEFSC)

Drew Minkiewicz (Blackpoint Law)
Kenneth Murgo (Trap/Pot)
Allison Murphy (GARFO Sustainable Fisheries)
Scott Olszewski (NEFMC)
Marc Palombo (Lobster)
Ross Pearsall (Recreational)
Sam Rosen (Lobster)
Wes Townsend (MAFMC; Pot/Trap/Gillnet)
Erin Wilkinson (ME DMR)
Renee Zobel (NEFMC)

ODWG Work Plan: 2025

2025 Priority	Jan – Mar	Apr – Jun	July – Sept	Oct – Dec
Joint action with MAFMC and GARFO to revise gear marking regulations across FMPs	FMAT/PDT Forms; FMAT/PDT meets	MAFMC discusses FW; NEFMC initiates FW; FMAT/PDT meets	ODWG Receives update (July); public input session (August) Anticipated final action: September (NEFMC), October (MAFMC)	
WG report on gear conflict solutions for lobster/Jonah crab, gillnet, and other trap/pot fisheries	ODWG develops 2025 work plan	ODWG continues work on TOR 3B report; draft/update presented to Council	Final TOR 3B report presented to Council	
Continue work addressing TORs and refine TORs as needed	ODWG works to address TORs			

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Status of Alternative Gear-Marking Framework Action

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Atlantic Large Whale TRT Update

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Take Reduction Plan Modification Timeline

For All ALWTRP Fisheries

- Summer 2026: Public scoping
- November 2026: Team meets to start deliberations
- Feb/March 2027: Team meets to vote on the final suite of recommendations
- Late 2027/Early 2028: NMFS publishes a proposed rule and Draft Environmental Impact Statement, with a comment period
- Early-Mid 2028: NMFS reviews and responds to comments, finalizes rule and Environmental Impact Statement
- Late 2028: NMFS publishes a final rule, with an effective implementation date of December 31, 2028.

Addressing TOR 3B

- **Follow-ups from April 29 ODWG Meeting**
  - ***Satellite connectivity costs & options***
  - ***Potential on-demand gear use***
  - ***Vessel maneuverability/ requirements for visibility***
  - ***Alerting vessels to on-demand gear presence***
- **Develop recommendations to include in TOR 3B report**

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Satellite Connectivity Costs & Options

- SpaceX (Starlink) and Amazon (Project Kuiper) are most cost-effective and versatile for marine applications
- Increased satellite capacity expected to cause declines in prices by 2030 (4.6% across industry, 11.5% for Starlink)
- Top pick for:
  - *Combined crew welfare & IoT solutions:* Starlink
  - *IoT on a budget:* Globalstar
  - *Performance IoT:* Iridium

Satellite Network & Solutions Analysis

Operator Analysis—Services, Network, Hardware

Segments	Globalstar	iridium	SPACEX	amazon | project kuiper	eutelsat ONEWEB	Viasat	ORBCOMM
Planned Sats	25 (48+)	66	12,000 (42,000)	3,236	652 (6,372)	19	31 (48+)
Orbit	LEO	LEO	VLEO	LEO	LEO/GEO	GEO	LEO
Connectivity Standard[1]	Proprietary	Hybrid	Hybrid	Proprietary	Hybrid	Hybrid	Hybrid
Type	Hybrid - All	Partnerships/ Wholesale	Direct-to-consumer/ partnerships	Direct-to-consumer	Partnerships/ wholesale	Partnerships/ Wholesale	Partnerships/ wholesale
Latency	~3 s	395 ms–3 mn	30–60 ms	35–70 ms (estimated)*	70 ms	600–800 ms	<15 s
High-Speed Internet	No	No	Yes	Yes	Yes	Yes	No
IoT Data	Yes	Yes	Yes	Yes (third party only)	Yes (third party only)	Yes	Yes
User Terminal Costs (Starting US$)[2]	US$129.99	US$139	US$350 (consumer) US$1,499 (enterprise)	TBD	US$10,000 (enterprise) US$13,500 (maritime)	US$250 (consumer) US$5,000 (maritime)	US$500+
Terminal Vendors	Third party	In-house (supports third party)	In-house (supports third party)	In-house	Third party	Third party	In-house
Connectivity Tariff Costs (Starting US$)[3]	3.72×10−2 $ per byte	3.5×10 −5 $ per byte	1.00×10 −9 $ per byte	TBD	7.84×10 −10 $ per byte	1.43×10 −5 $ per byte	4.34×10 −3 $ per byte
Monthly Connectivity Tariffs	US$8.95/240 Bytes	US$35/1 MB	US$50/50 GB (+US$150 Access Fee)*	TBD	US$295.00/350 GB	US$29.99/2 MB*	US$44.50/10 kB

1. The connectivity standard indicates whether the provider supports 3GPP NTN standards (NR-NTN or NB-IOT/LTE-M) and/or proprietary connections.
2. Terminal prices vary significantly depending on service requirements and application. Pricing is per device/terminal.
3. Wholesale pricing and higher-tier plans can drive down the cost per byte, pricing based on monthly connectivity tariffs.
4. *It should be noted that the monthly connectivity tariffs for SpaceX require a monthly US$150 Access Fee, meaning US$200 a month minimum is required to enable connectivity, with additional blocks to be added at US$50 or US$500 increments.
5. *Project Kuiper latency is expected to be 5–10 ms higher than Starlink's VLEO performance due to its higher orbital altitude.
6. *Viasat pricing is based on Inmarsat BGAN M2M pricing, typical Viasat Maritime connectivity pricing starts – US$995/75 GB

Satellite Connectivity Costs & Options

- What is the bandwidth needed for uploading/downloading/accessing gear marking data?
  - Does not require much data to view locations
  - Example: base package for Starlink would likely cover on-demand use
- If vessels do not already have satellite connections, what are their options for visualizing on-demand gear?
  - Vessels already using TimeZero with satellite internet can access on-demand gear locations
  - For nearshore waters, cell phones with a data plan could be used to access gear locations using EarthRanger Buoy app

Satellite Connectivity Costs & Options

- Is constant real-time data necessary for all user groups, or could there be a rate at which vessels can access data that would still provide adequate information (i.e., ping once an hour, once every 30 minutes)?
- Are there certain areas (i.e., areas of high gear density) where vessels would need continuous updates, versus others where more intermittent updates would be sufficient?

Potential On-Demand Gear Activity

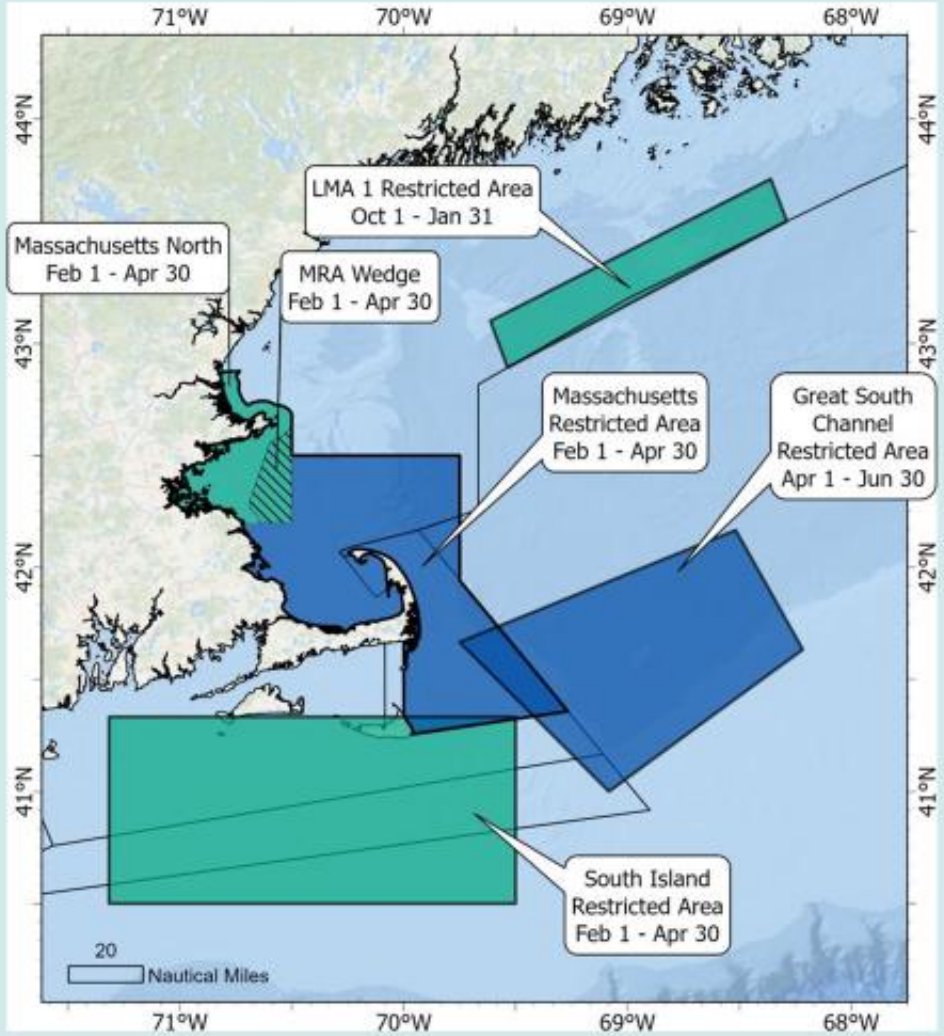
- What could the potential footprint of on-demand fishing gear be?
  - Distribution will depend on outcome of Alternative Gear-Marking FW & subsequent lobster/Jonah crab rulemaking – some alternatives would restrict alternative gear-marking to certain areas and times (i.e., ALWTRP vertical line restricted areas), others would have larger spatial/temporal scope
  - ALWTRT deliberations and recommendations/ subsequent rulemaking
- What might gear density look like in certain areas?
  - Would gear configurations be the same for on-demand gear as traditional buoyed gear?
  - Past fixed gear effort may not be representative of on-demand gear use
    - ALWTRP closures implemented in 2021
    - Other changes in fishing effort
    - Costs/benefits to using on-demand fishing gear

Average Monthly Vertical Line Calculations

On-Demand Fishing Gear Conflict Working Group

July 2025

Current Trap/Pot Restricted Areas



LMA 1 RA: 1,030 mi^2 (2,667 km^2)
MRA with MRA North state expansion:
3,566 mi^2 (9,236 km^2)
GSC Trap/Pot: 3,230 mi^2 (8,265 km^2)
SIRA: 5,468 mi^2 (14,163 km^2)
MRA Wedge: 200 mi^2 (518 km^2)
Total: 13,494 mi^2 (34,849 km^2)

As of 2021: All areas open to ropeless fishing (with Exempted Fishing Permits)

How Many Lines Could On-Demand Gear Replace Today?

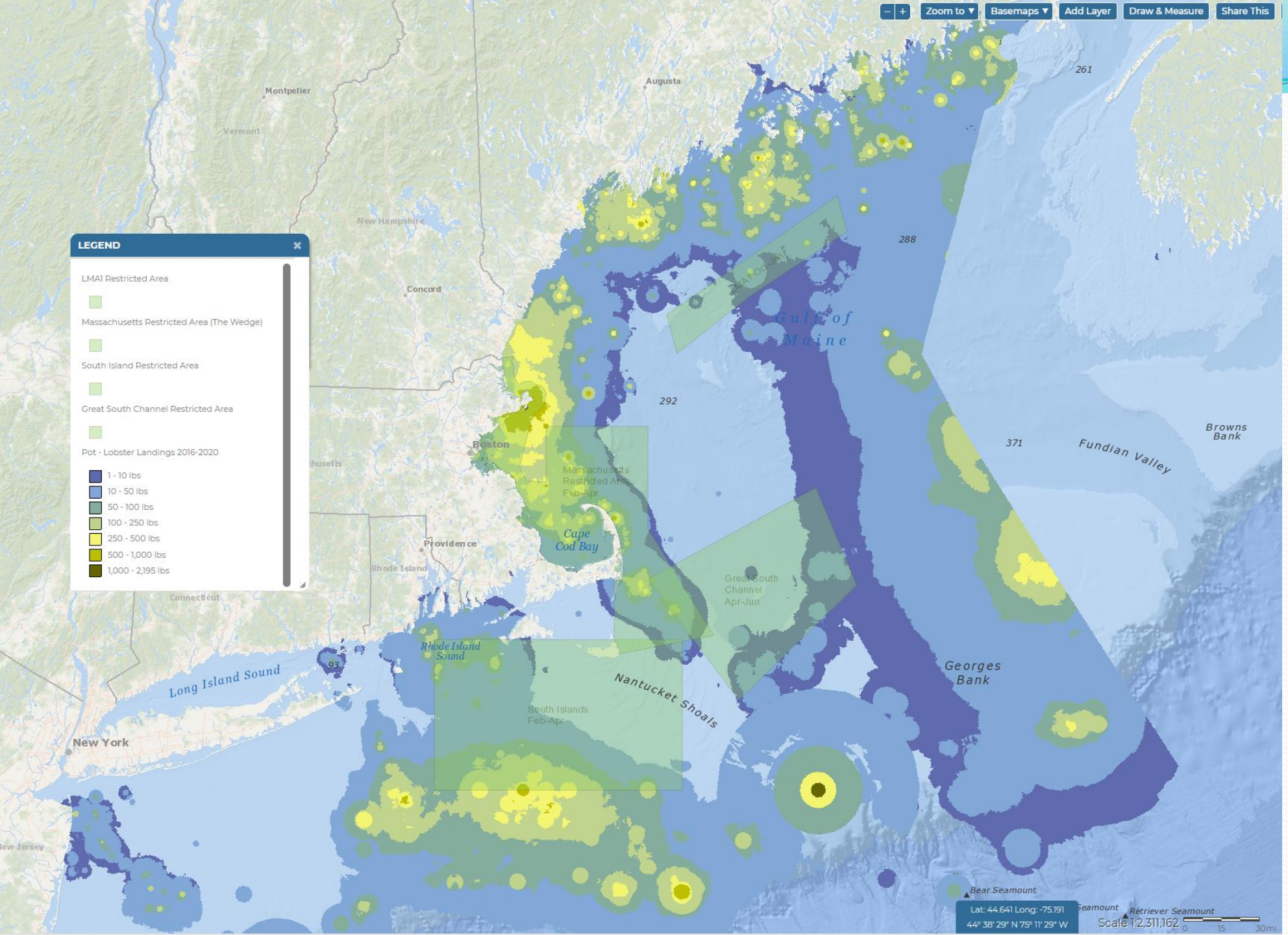
Northeast Trap/Pot Restricted Areas	Restricted Period	Average Number of Lobster and Jonah Crab Vertical Lines Per Month (Post 2021 Trawling Up Measures)
LMA 1 Restricted Area	Oct 1-Jan 31	1,644
MRA (State waters)	Feb 1-Apr 30	3,578
MRA (Federal waters only)	Feb 1-Apr 30	961
MRA with MRA Wedge (Federal waters only)	Feb 1-Apr 30	1,354
South Island Restricted Area	Feb 1-Apr 30	344
Great South Channel	Apr 1-Jun 30	*

* Calculations for average number of vertical lines in MRA State waters exclude May fishing days
** Fishing effort data prior to the implementation of the GSC (65 FR 80368, December 21, 2000; effective January 22, 2001) is unlikely to be representative of the fishery today.

How Many Lines Could On-Demand Gear Replace Today?

Current Restricted Areas	Restricted Period	Average Number of Other Trap/Pot Vertical Lines Per Month	Average Number of Gillnet Vertical Lines Per Month
LMA 1 Restricted Area	Oct 1-Jan 31	0	7
MRA (State waters only)	Feb 1-Apr 30	21	40
MRA (Federal waters only)	Feb 1-Apr 30	3	9
MRA with MRA Wedge (Fed waters only)	Feb 1-Apr 30	3	14
South Island Restricted Area	Feb 1-Apr 30	10	12
Great South Channel	Apr 1-June 30	*	*
SE Black Sea Bass T/P	Nov 1-Apr 30	1,120	

* Fishing effort data prior to the implementation of the GSC (65 FR 80368, December 21,2000; effective January 22, 2001) is unlikely to be representative of the fishery today.



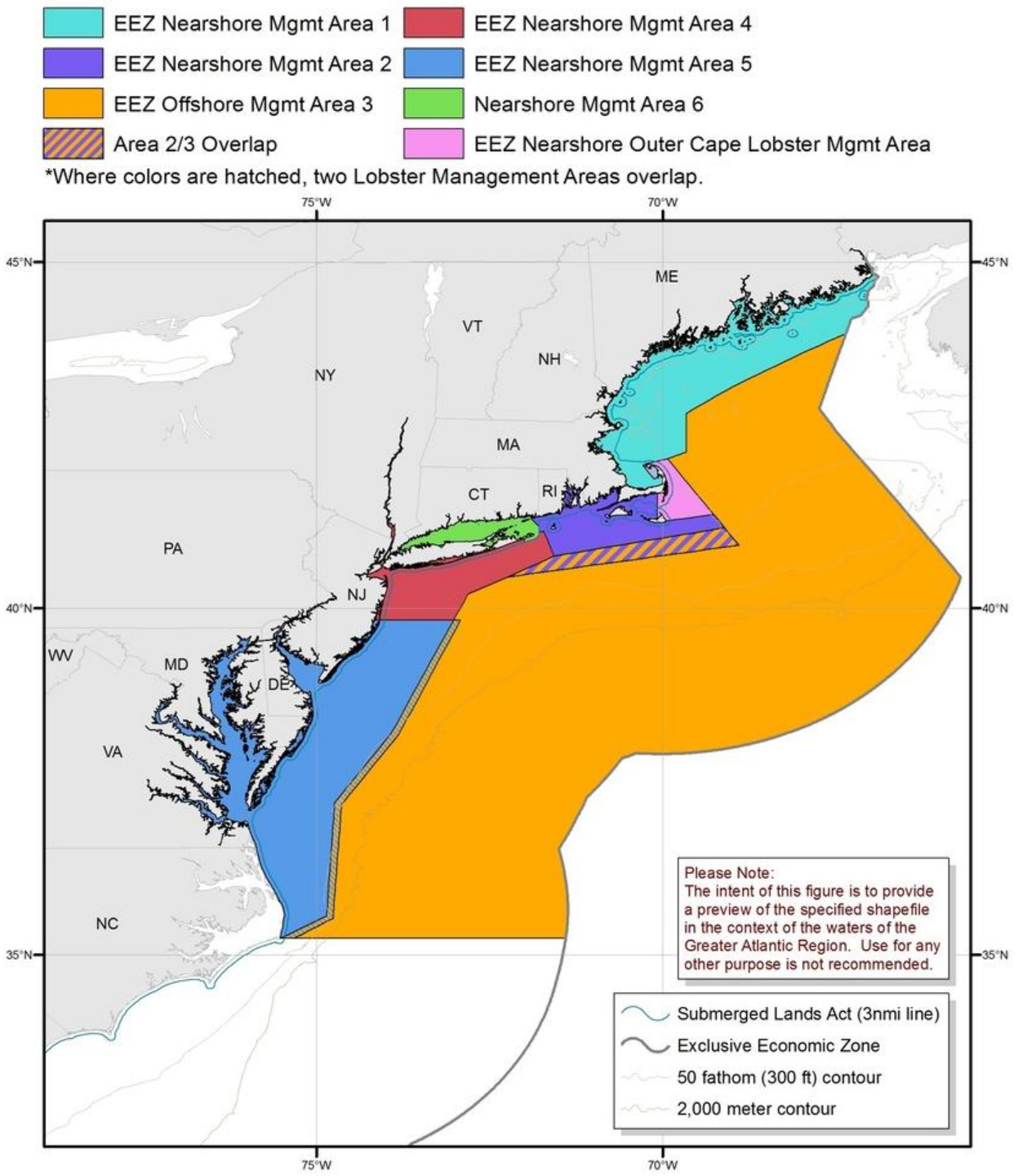
Lobster Landings (lbs) 2016-2020 and Atlantic Large Whale Take Reduction Plan areas.

Image Source: Northeast Ocean Data Portal, Retrieved 6/4/2025.

Lobster Management Areas and Minimum Traps/Trawl by Area (Effective May 1, 2022)

***Map* and *Data* Source: NOAA Fisheries**

Management Area		Minimum Traps/Trawl
LMA 1	3-6 nm	10
	6-12 nm	15
	12+ nm	25
Outer Cape Cod	3-12 nm	15
	12+ nm	20
LMA 2	3-12 nm	10
	12+ nm	15
LMA 2/3 Overlap		20 (LMA 2 permit holders) 45 (LMA 3 permit holders)
LMA 3 North of 50 fathom line on south end of GB		45, max trawl length 1.75 nm
LMA 3 South of 50 fathom line on the south end of GB		35, max trawl length 1.75 nm
LMA 3 GB Restricted Area		50, max trawl length 1.75 nm



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Potential On-Demand Gear Use

Questions/comments/discussion?

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Vessel Maneuverability and Requirements for Visibility

- How close can various types of vessels get to on-demand fishing gear before needing to adjust their path to avoid gear?
- What is the minimum distance of visibility necessary for various types of vessels to avoid gear conflict?

Vessel Type	Discussion from Previous ODWG Meetings
Scallop dragger	• Slower moving (3-4 knots) • Likely do not need large visibility window
Other Mobile gear (i.e., groundfish)	• Can fish close to fixed gear (within ¼ mile), closer if in communication with fixed gear fishermen • 3-4 mile visibility window likely adequate
Recreational vessels	• Sometimes fish very close to buoys; can fish within 10-20 feet depending on tides/currents

Alerting Vessels to On-Demand Gear Presence

Idea	Pros	Cons
Pre-Trip Notification	• Vessels would indicate where they plan to fish and could be alerted if on-demand gear was in use in that area • Could be supplemented with geofence	• Additional step to complete before fishing – burden to mobile fleet • Challenges with leveraging for this purpose • Not real time
Geofences (VMS)	• Vessels would get an alert when entering an area where on-demand gear is in use • Have been used provisionally to address on-demand gear conflict – added around area of gear conflict in MRA in Feb 2025	• Viability as long-term solution? • Requires VMS to receive notifications
Letters to Permitholders	• Could distribute basic gear location information • NEFSC issues letters to permitholders with info re: on-demand gear trials	• Not realistic for multiple updates per year (may not be real time info) • Missing some stakeholders (recreational fleet?)
Universal marking/ detection system	• Accessible to all user groups (fixed/mobile/rec) • Potential for real-time (or close to real time) data	• Requires cloud connectivity at sea

Other strategies/technologies?

TOR 3B Report Recommendations/ Discussion

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Possible ODWG Recommendations

TOR 3b: Develop recommendations on reducing gear interactions between on-demand gear used in the Northeast lobster and Jonah crab fisheries and other types of fishing gear (including the fixed gear, mobile gear, and recreational/charter fleets) in the form of a final report by fall 2025.

- Does the ODWG have any recommendations for the Council?
- What additional information or analyses does the ODWG need to support or further develop recommendations?

Scope of Recommendations: ODWG is making recommendations specific to Council-managed fisheries (fixed/mobile/recreational). Can also include more general comments re: on-demand gear landscape.

Pathways for ODWG Recommendations

- **Council Actions**
  - ***Now:*** Council could develop measures to address gear conflict before potential widespread use of on-demand gear
    - Possibility of employing gear conflict amendment
    - Likely more general measures/recommendations
  - ***Future:*** Council could follow gear conflict amendment process to react to specific instances of gear conflict
    - Could be more specific area/ issue-based measures
- **Non-regulatory measures**
  - Recommendations for actions outside of fisheries regulations (ex. communication strategies; gentlemen's agreements)
- **Other**

Past ODWG Discussion – Possible Recommendations?

- **Use of a universal marking and detection system**
  - Real time/close to real time on-demand gear locations
    - Automatic versus manual gear marking?
    - Marking both versus one end, indicating orientation of the trawl (ex. one end marked as north or south end of trawl)
    - Other information included re: gear?
  - Available to all user groups (fixed, mobile, recreational fleets)
    - Educational component/outreach?
    - Chart plotter integration (commercial) or smartphone app (recreational)
    - TimeZero; EarthRanger Buoy app
    - Costs to user groups – internet connectivity needed
  - Specific visibility distance for various fleets; data sharing strategies?

Past ODWG Discussion – Possible Recommendations?

- **Gentlemen's agreements**
  - Consider existing gear setting strategies, document/formalize these in some way if appropriate/feasible
  - Develop new agreements if appropriate
- **Communication strategies**
  - Increased communication and outreach efforts for mobile/recreational fleets regarding on-demand gear use and general locations
    - NEFSC conducts regular outreach re: EFP activity; specific instances of gear conflict

Questions & Discussion

- Does the ODWG have any recommendations for the Council?
- What additional information or analyses does the ODWG need to support or further develop recommendations?

TOR 3b: Develop recommendations on reducing gear interactions between on-demand gear used in the Northeast lobster and Jonah crab fisheries and other types of fishing gear (including the fixed gear, mobile gear, and recreational/charter fleets) in the form of a final report by fall 2025.

TOR 3B Report: Draft Outline

1. Background
   a) On-Demand Fishing Gear Conflict Working Group (description of ODWG formation/goals/membership)
   b) ODWG Terms of Reference
2. Progress Updates: Terms of Reference
3. ODWG Recommendations for Reducing Gear Interactions between On-Demand Gear Used in the Northeast Lobster/Jonah Crab Fishery and Other Types of Fishing Gear

Any additional information to include?

Next Steps

- Council staff to work on draft TOR 3B report
- Next ODWG Meeting: August 26, 2025, in Wakefield, MA
  - Finalize recommendations for TOR 3B report
  - Discuss Alternative Gear-Marking Framework and provide feedback
  - Alternative Gear-Marking Framework public comment session
- Reviewing/Finalizing TOR 3B Report: via correspondence
- Final TOR 3B Report to Council: September 2025, Gloucester, MA

Other Business

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Additional Slides

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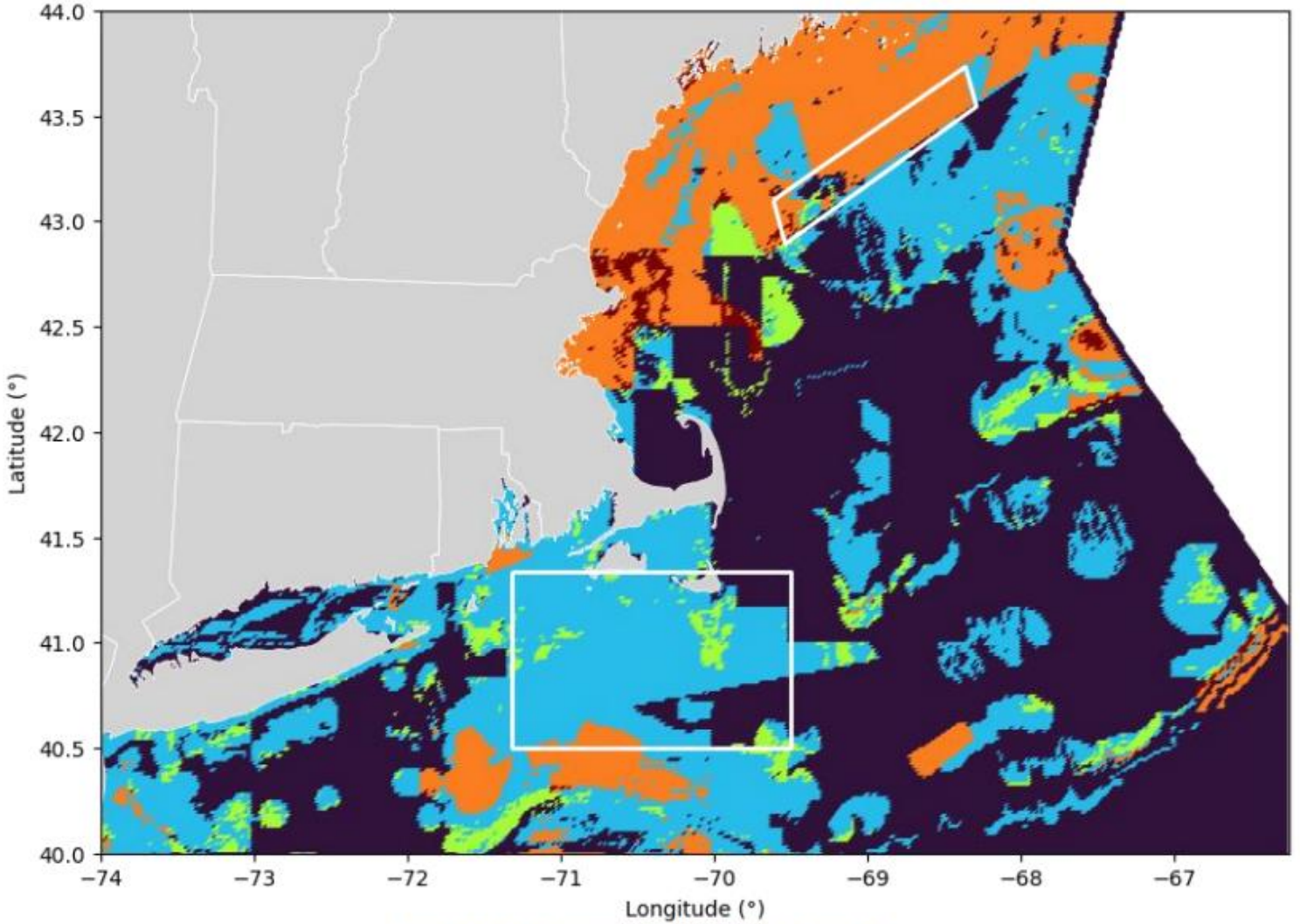
MITRE Restricted Area Gear Conflict Risk Map – as presented at 4/29 ODWG Meeting



- Used locational fixed-gear density (data support tool fixed gear layer); mobile fishing operations (VMS)
- 2019-2021 data, combined for average activity within 3 months of spring fishing season

No Data

Low

Moderate

Elevated

High

MITRE

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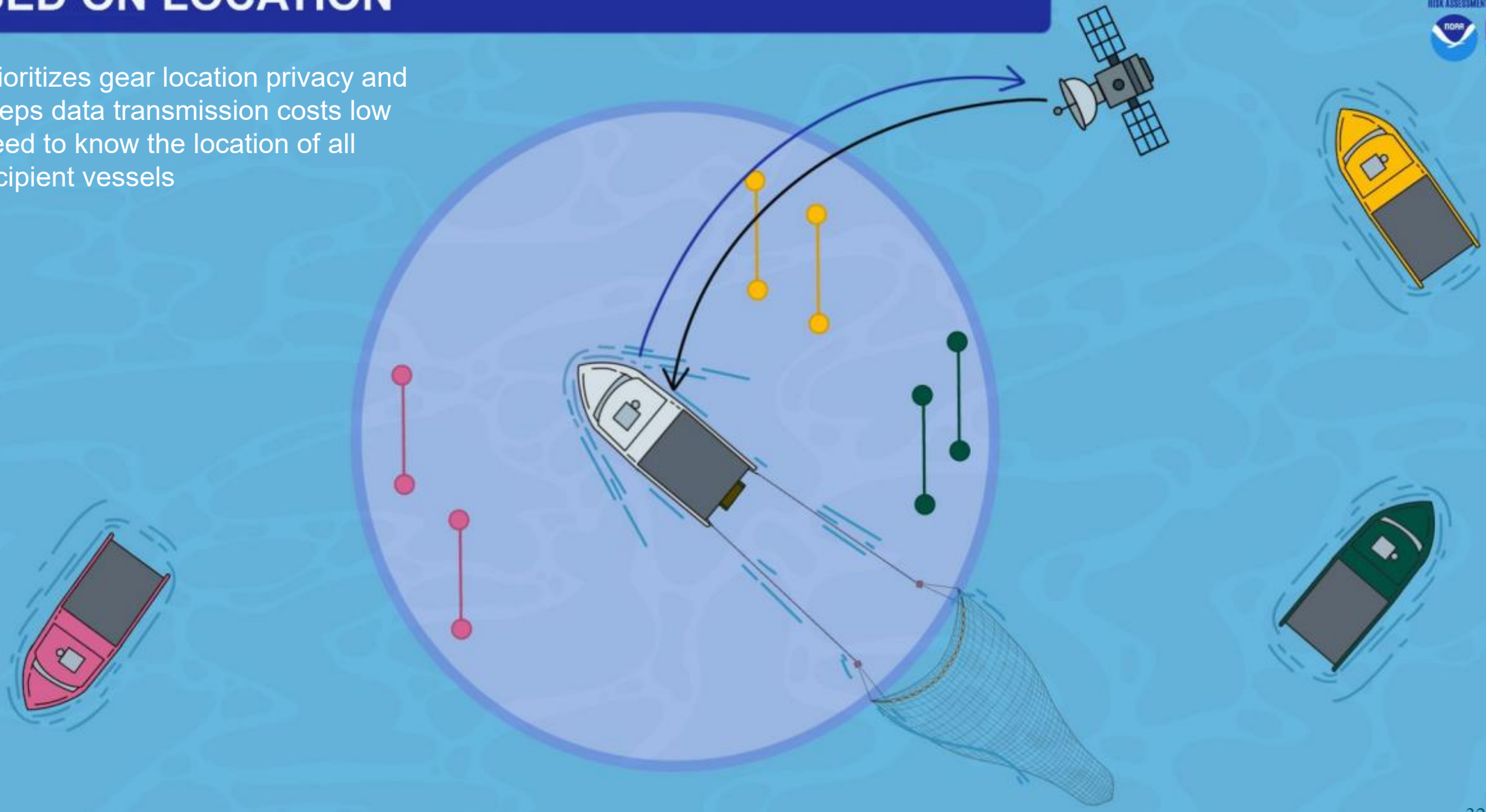
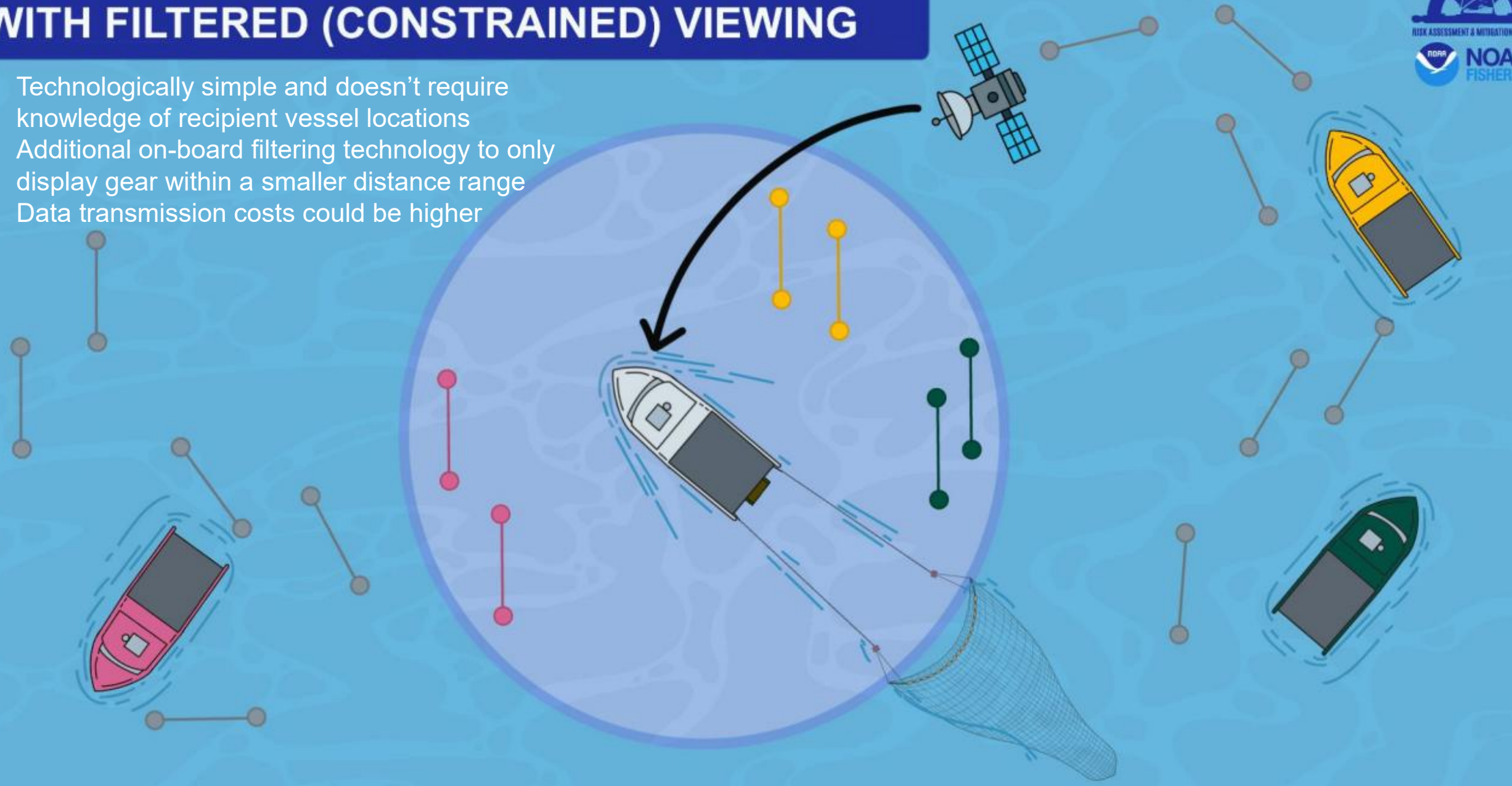
OPTION 1: SEND LIMITED DATA TO EACH VESSEL BASED ON LOCATION

- Prioritizes gear location privacy and keeps data transmission costs low
- Need to know the location of all recipient vessels



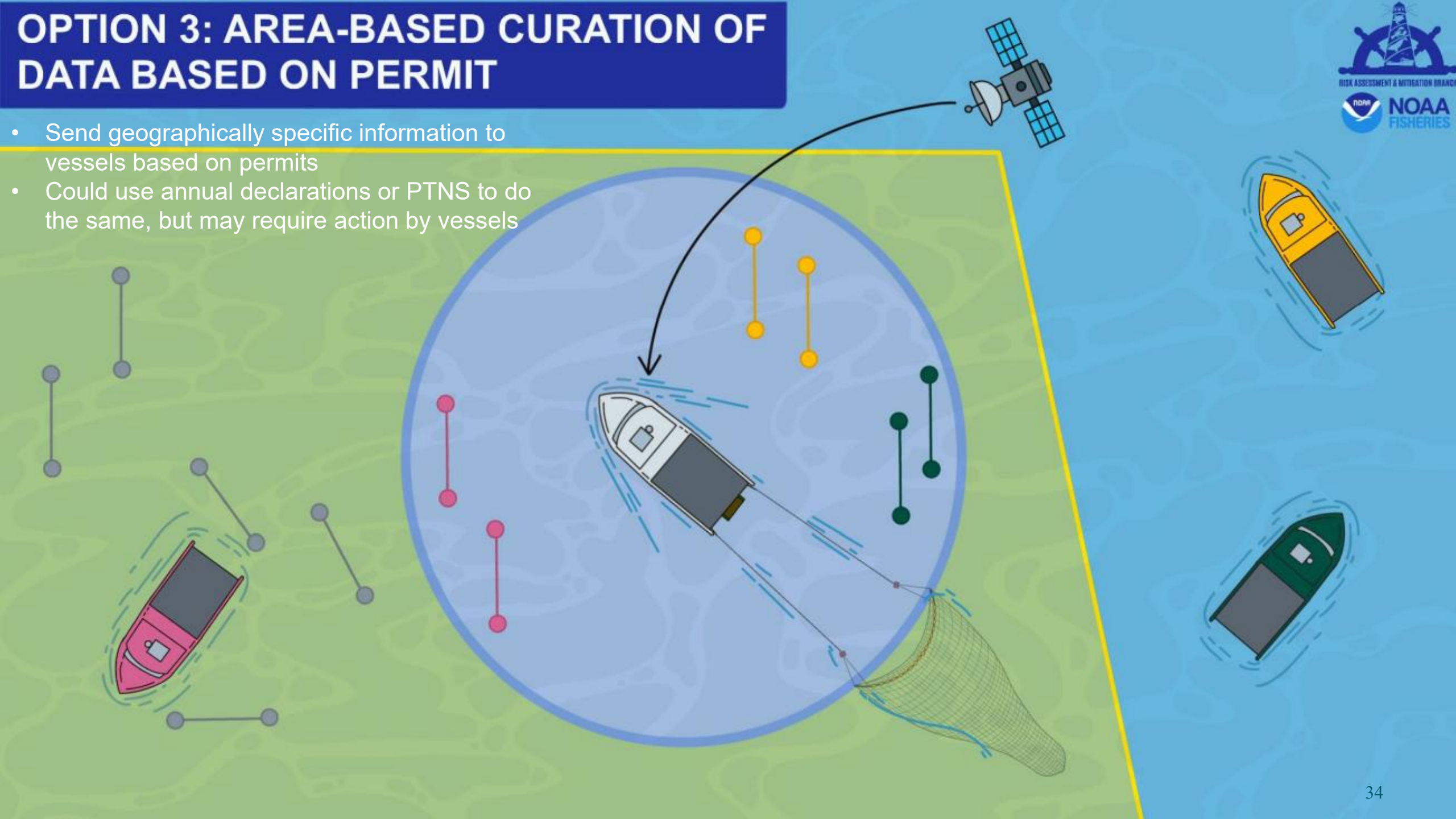
OPTION 2: SEND ALL DATA TO ALL VESSELS WITH FILTERED (CONSTRAINED) VIEWING

- Technologically simple and doesn't require knowledge of recipient vessel locations
- Additional on-board filtering technology to only display gear within a smaller distance range
- Data transmission costs could be higher



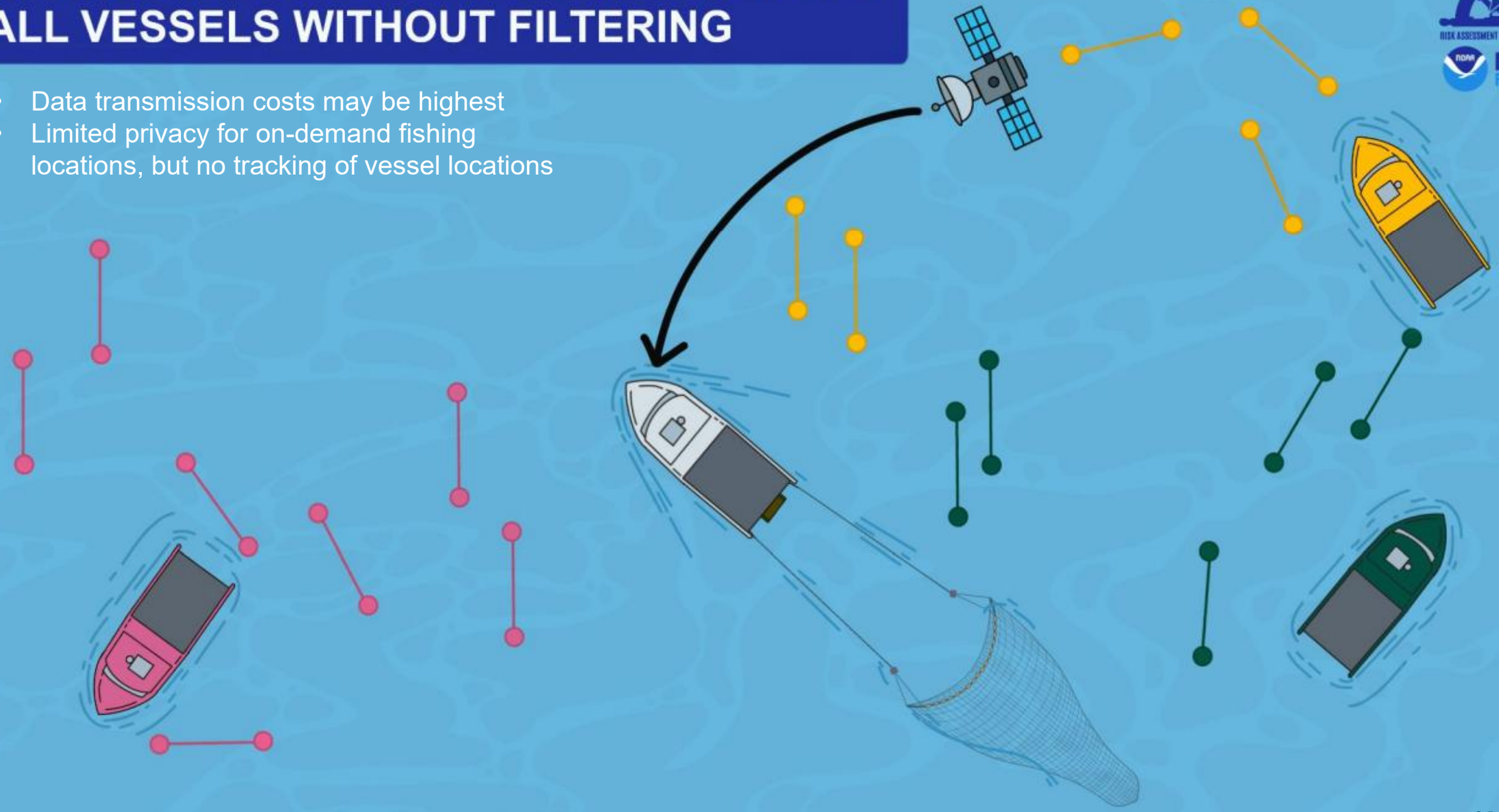
OPTION 3: AREA-BASED CURATION OF DATA BASED ON PERMIT

- Send geographically specific information to vessels based on permits
- Could use annual declarations or PTNS to do the same, but may require action by vessels



OPTION 4: SEND ALL AVAILABLE DATA TO ALL VESSELS WITHOUT FILTERING

- Data transmission costs may be highest
- Limited privacy for on-demand fishing locations, but no tracking of vessel locations



NEFMC Gear Conflict Amendment

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Framework Process

Fishermen bring a gear conflict issue to the Council

Council will define a proposed gear conflict management area (not to exceed 2,700 square nautical miles)

Council seeks industry advice through public meetings; industry representatives report outcomes to oversight committee

If action is necessary, the Council develops/ analyzes recommended management actions over 2 framework meetings

Council reviews/ approves framework adjustments, appoints monitoring committee

Monitoring Committee reviews status, alerts Council if any adjustments are needed

- Process designed to allow groups of fishermen to request management assistance and make changes to rules in specific gear management areas through Council process

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NEFMC Gear Conflict Amendment

Scallops, Northeast Multispecies, Herring, Monkfish FMPs
Framework Measures to address gear conflict:

1) Mandatory monitoring of a radio channel by fishing vessels
2) Fixed gear location reporting and plotting requirements
3) Standards of operation when gear conflicts occur
4) Fixed gear marking and setting practices
5) Gear restrictions for specific areas (including time and area closures)
6) Vessel monitoring systems
7) Restrictions on the number of fishing vessels or amount of gear
8) Special permit conditions

These measures can be developed/added to designated FMPs via a framework adjustment.

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1) Mandatory monitoring of a radio channel by fishing vessels

- Vessels fishing in a gear conflict management area would be required to continuously monitor a certain radio channel
- Violation: if vessels fishing in a gear conflict management area could not be raised on the radio channel
- Could presume that other vessels in the gear management area are aware of gear locations

Potential Applications: Alert vessels to on-demand gear presence in a gear management area via radio broadcast

2) Gear location reporting by fixed gear fishermen; mandatory plotting by mobile gear fishermen

- Fixed gear vessels would mark gear locations and provide notification of locations to mobile gear vessels working in specified areas
- Mobile vessels wanting to fish in an area would provide notification of intent; fixed gear locations would be provided for mobile vessels to plot/ note in vessel log
- Violations:
  - Fixed gear vessels that do not report gear locations
  - Mobile gear vessels that do not record reported locations of fixed gear
- Technology to make fixed gear marking/ making gear locations available via apps/chartplotter is in development/ available

3) Standards of operation when gear conflict occurs

- Develop protocols for release or retention of entangled gear
  - Example: When disentangling another vessel's gear, it should be removed in a way that minimizes damage to the major components of the gear. For example, it might be acceptable to cut the groundline to remove the tangled gear, but it should be re-tied once it is returned to the water.
- Current protocol for NEFSC EFP: if vessels accidentally tow up an on-demand unit, they are asked to retain the unit and alert the NEFSC Gear Research Team

Potential Applications: Would help answer the question of what happens if on-demand gear is accidentally towed up

4) Fixed gear marking and setting practices

- Council could adjust:
  - Fixed gear marking requirements – add/ change markers, require certain spacing of markers
  - Length of gear – limit amount of area taken up by fixed gear
  - Deployment – could require setting in certain directions/along specific bottom contours. Mobile gear fishermen could be required to fish within defined lanes through gear management area
  - Monitoring of fixed gear
- Could be used to implement more formalized “gentleman’s agreements”; different strategies for different areas

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5) Gear restrictions for specific areas (including time and area closures)

- Fishing areas would be set aside for specified periods to allow access by one or more gears
  - Separation buffers – establish boundaries around adjacent gear management areas where fishing is prohibited
  - Consider ways to reduce gear conflict during transition times

6) Vessel monitoring systems

- Any vessel fishing within a gear conflict management area would be required to have functioning VMS onboard
- Would allow vessels to report and receive fixed gear locations
- Could be used to monitor location of vessels and fixed gear locations; potential enforcement applications?

7) Restrictions on the maximum number of fishing vessels

- Could set a ceiling on the amount of fixed gear and trawling activity in a gear management area to control density of fishing effort
- Based on physical factors of area (amount of trawlable bottom, area available for setting fixed gear, strength of prevailing tidal currents)

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8) Special permitting conditions

- Add special conditions or industry agreements as part of a vessel's permit; would be applied if a vessel was fishing in a gear conflict management area
- NMFS would distribute industry-based agreements and require fishermen to acknowledge receipts of agreements/conditions before the vessel could fish within affected area
  - Potential for a training requirement/educational component to be a special permit condition?