

SOUTHEAST REGION FOR-HIRE
ELECTRONIC REPORTING
DEVELOPMENT PLAN

Prepared by:
Sustainable Fisheries Division
Southeast Regional Office

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LIST OF ACRONYMS

Acronym	Definition
ACCSP	Atlantic Coastal Cooperative Statistics Program
APAIS	Access Point Angler Intercept Survey
API	Application Program Interface
eVTR	Electronic Vessel Trip Report
FACTS	Fishing Activity and Catch Tracking System
FIN	Fishery Information Network
GARFO	Greater Atlantic Regional Fisheries Office
GC	NOAA General Counsel
GMFMC	Gulf of Mexico Fishery Management Council
GPS	Global Positioning System
GSM	Global System for Mobile Communications
HMS	NOAA Fisheries Office of Highly Migratory Species
IFQ	Individual Fishing Quota
IVR	Individual Vessel Record
IVV	Independent Validation and Verification
LA-DWF	Louisiana Department of Wildlife and Fisheries
MAFMC	Mid-Atlantic Fishery Management Council
MRIP	Marine Recreational Information Program
NEFSC	Northeast Fisheries Science Center
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OLE	NOAA Office of Law Enforcement
OST	Office of Science and Technology
PII	Personally Identifiable Information
Program	Southeast For-hire Electronic Reporting Program
QA/QC	Quality Assurance / Quality Control
SAFMC	South Atlantic Fishery Management Council
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SRHS	Southeast Region Headboat Survey
TMS	Trip Management System
TPWD	Texas Parks and Wildlife Department
USCG	US Coast Guard
VESL	Unified Trip Ticket System of Bluefin Data
VMS	Vessel Monitoring System

INTRODUCTION

This document includes the steps taken to develop the Southeast For-hire Electronic reporting program (Program¹), including where data will be housed, needed data elements, location reporting, compliance and enforcement, outreach and engagement, and budget considerations. It will be used to develop next steps for the electronic reporting programs for the Gulf of Mexico and South Atlantic, including phased implementation.

Fishery management plan amendments were developed by the South Atlantic Fishery Management Council (South Atlantic Council) and Gulf of Mexico Fishery Management Council (Gulf Council) and have been approved by the Secretary of Commerce to implement electronic reporting in the federally permitted for-hire fleets in the Atlantic² and Gulf of Mexico³. The intent of the Councils was to provide more timely catch information by federal for-hire vessels, to enhance data collection for better fisheries management and science, to provide accurate and reliable fisheries information about catch, effort, and discards to be used in future stock assessments and management evaluations. These data may also provide more timely information than the current Marine Recreational Information Program (MRIP) survey, and may provide more accurate and reliable information for many species with low catches, low annual catch limits, or for species that are only rarely encountered by fishery participants.

The final rules for the fishery management plan amendments will require electronic reporting for federally permitted for-hire vessels in the Gulf of Mexico and Atlantic. Once implemented, the goal of the Program is to produce accurate, timely, and valid data for management and science in the federally permitted for-hire fleet in the Southeast Region. Reporting for vessels with federal permits in more than one Council area will not be required to fill out multiple reports. Rather, they will have to submit reports under the Council plan that has the most restrictive requirements, e.g. reporting periodicity, number of data elements, hourly location reporting, etc. Vessels participating in the Southeast Region Headboat Survey (SRHS) will continue to submit data through that program.

Once implemented, the amendments will affect many stakeholders in the Southeast Region (Table 1). At that time, for-hire electronic reporting in the South Atlantic will impact 2,138 vessels, including 275 federally permitted for-hire vessels that are also permitted for Mid-Atlantic Fishery Management Council (Mid-Atlantic Council) managed fisheries, and 373 for-hire vessels that are also permitted for Gulf Council managed fisheries. In the Gulf of Mexico, for-hire electronic reporting will impact 1,328 vessels, including the 373 vessels that are also permitted in the South Atlantic.

¹ The Program was previously called SEFHIER

² <http://safmc.net/download/SAFMC-FHER-SubmitVersion.pdf>

³ <http://gulfcouncil.org/wp-content/uploads/Electronic-Reporting-for-For-Hire-Vessels-5-23-17.pdf>

Table 1: Number of federally permitted for-hire vessels by Council area⁴

Council Area	Number of Vessels ^{1,2}
Gulf of Mexico	1,328
Gulf of Mexico / South Atlantic	373
South Atlantic	2,138
South Atlantic / Mid-Atlantic	275
South Atlantic / Greater Atlantic	21

¹ – Vessels in shared areas are included in the individual areas

² – Vessel numbers from SERO Permit Office

Development and implementation of the regulatory, procedural, staffing, and budgetary aspects of the amendments are complex, involving the Southeast Regional Office (SERO), Southeast Fisheries Science Center (SEFSC), NOAA Fisheries headquarters line offices, South Atlantic Council, Gulf Council, state marine fisheries agencies, and thousands of stakeholders. These agencies and stakeholders bring many perspectives on how to implement electronic reporting in the for-hire fleet in the region. To address the many issues involved in consideration and implementation of electronic reporting, the Southeast Regional Office assembled a Program team consisting of stakeholders and technical staff.

The following workgroups were established to focus on issues important to implementing the Program:

- Survey Design
- Data Housing
- Compliance and Enforcement
- Outreach and Education
- Location Tracking
- Budget

These workgroups began meeting in 2017 and have continued meeting as needed to address issues that needed to be addressed in the development and implementation process. This Southeast Region For-hire Electronic Reporting Development Plan identifies critical issues that were discussed and resolved by these workgroups.

The Program Development Plan and Strategic Issue document is divided in two sections:

- Phase I: Findings and Outcomes
- Appendices

⁴ From South Atlantic (<http://safmc.net/download/SAFMC-FHER-SubmitVersion.pdf>) and Gulf (<http://gulfcouncil.org/wp-content/uploads/Electronic-Reporting-for-For-Hire-Vessels-5-23-17.pdf>) amendments

PHASE 1: FINDINGS AND OUTCOMES

Developing the Program required the input of many organizations (Appendix 1) and individuals (Appendix 2) to understand background information, program organization, available technologies, funding and staffing needs to effectively implement electronic for-hire programs in the Gulf of Mexico and South Atlantic. The findings and outcomes of the Program workgroups are summarized in the following.

DATA HOUSING

SERO and SEFSC staff met to discuss data housing issues and to receive presentations from three potential data housing sites: SERO, SEFSC, and Atlantic Coastal Cooperative Statistics Program (ACCSP); this information is included in Appendix 5. Data housing discussions were limited to government or Fisheries Information Networks (FINs) to provide maximum control of all data issues. FINs are cooperative state-federal programs that design, implement, and conduct marine fisheries statistics data collection programs and integrate those data into network-specific data management systems that meet the needs of fishery managers, scientists, and fishermen. The two FINs in the southeast region are ACCSP and Gulf FIN. Gulf FIN was not interested in being considered because as the data housing entity for the Program because of internal program constraints.

The most important factors identified by the broader Program implementation team for determining where for-hire data should be housed included:

1. Access to data by program partners such as SERO, SEFSC, and state management agencies,
2. Ability of the data housing entity to adapt the system to future changes,
3. Integration of Program data with other NOAA Fisheries' programs or data streams,
4. Estimated staffing needs, and
5. Estimated short term and long-term funding needs.

ACCSP was selected as the best choice for Program data housing for the following reasons:

1. ACCSP has the technical, logistical, and financial capacity to house South Atlantic and Gulf of Mexico electronic reporting data,
2. Additional federal funding is not needed for data housing through ACCSP,
3. Limited additional federal staff at ACCSP would be needed for data housing
4. Reliable back-up system,
5. Long-standing working relationships with states agencies, federal agencies, and Fishery Management Councils,

6. Existing overlap in housing for-hire data from the Atlantic region: Mid-Atlantic's for-hire reporting and the South Atlantic Council's for-hire pilot study, and
7. Flexibility to make timely program changes to adapt to implementation challenges or changing conditions.

NOAA Fisheries and ACCSP have had ongoing discussions of data access and privacy protocols to ensure that ACCSP meets federal standards. This includes an agreement on meeting NOAA personally identifiable information (PII) requirements.

Ongoing data housing issues include:

1. Develop data process maps to determine the most effective transmission of data from various sources to ACCSP (e.g., vessel monitoring system [VMS], archival global position system [GPS] information, permits). ACCSP has an application programming interface (API) for location data. A data specification for hail-out will be included in eTrips Mobile version 2.
2. Work with ACCSP to:
 - a. Develop database needs and API requirements for location information (VMS or GPS) and hail-out requirements.
 - b. Examine all ACCSP codes (location, gear, fish, etc.) to see if additions are needed. This will require working through ACCSP committees to make changes.
 - i. Add additional fields needed that are not in the existing ACCSP database.
 - ii. Changes require ACCSP database programmer approval, API updates, and vendor software updates.
 - iii. Minimum estimated time per change is two months.
 - iv. Determine actions if an element or additional code is not approved.
 - c. Modify existing codes in the ACCSP database as needed.
 - i. Requires approval through the ACCSP Standards Committee.
 - ii. Minimum estimated time per change is two weeks.
 - d. Develop a protocol for incorporation of SERO landing locations to ACCSP for the hail-out form.
 - e. Determine if existing ACCSP location list include Gulf of Mexico locations for the logbook form. Some Gulf of Mexico codes are currently in ACCSP because of their housing Highly Migratory Species data.
 - f. Develop QA/QC protocols and procedures for updating data maintained at ACCSP.

SURVEY DESIGN

Survey design for the Program is critical to achieving the goal of timely data that can be used in management and stock assessments. Without a sound survey design, validation, and compliance, the data from the Program efforts will be of limited value. A team of federal, regional Council, state managers, and scientists developed a survey design and validation process that, over time, is expected to provide better data for science and management.

The Survey Design team identified a survey design to provide catch report data that is intended to be more robust and timely than those currently provided by the MRIP Charter Survey and that works synergistically with the existing SRHS. The Survey Design White Paper (Appendix 3) includes issues considered in the development of survey design components. The Program survey design includes four categories: (1) Data Elements, (2) Validation, (3) Integration, and (4) Calibration.

Data Elements

Staff involved in the design of the for-hire electronic reporting efforts in the South Atlantic and Gulf of Mexico sought to develop a Program to include data elements that were consistent between the South Atlantic and Gulf of Mexico, the Southeast Headboat Survey, and the reporting program for Highly Migratory Species. This consistency is expected to allow the Program to leverage existing database infrastructure and quality control protocols, reduce programming burden for third party software designers, and minimize duplicate reporting requirements for vessels carrying multiple permits.

The number of data elements collected seeks to balance data needed for management, stock assessments, and socio-economic analyses with time needed to report and reluctance to report some information, e.g. economic information. Managers and scientists may desire the reporting that many data elements for current and anticipated reporting and analysis needs. This needs to be balanced with the concern that reporting entities (e.g., captains and/or permit owners) might not fill out the forms correctly or not report at all if too much information is being requested. The Program implementation team attempted to reduce the reporting burden by distinguishing between essential elements that would need to be collected on every trip and less dynamic elements that could be collected on occasion using a randomly selected add-on survey process.

The Program implementation team discussed how many data elements would be accepted by reporting entities, or if this number of data elements would result in misreporting or not reporting at all. Auto-populating as many data elements as possible would be expected to reduce the reporting burden and help with reporting accuracy and compliance. Another factor expected to affect accurate reporting of economic data elements, which are required for economic analyses.

Economic data elements may generate resistance among those reporting because of concerns about privacy, competition, and tax liability.

Table 2 includes the data elements that the Program is expected to collect for Charter and SRHS trips. Table 3 includes the data elements that the Program is expected to collect for the Hail-out requirement in the Gulf of Mexico. These data elements were identified by the South Atlantic⁵ and Gulf of Mexico⁶ Electronic For-Hire Reporting Amendments through working with ACCSP, SEFSC, and SERO staff. Hail-out data elements are only required in the Gulf of Mexico; these data are needed for effective compliance.

Application developers can build software containing any data elements that are requested by a customer. However, complex applications take longer to develop and cost more. The Program implementation team is developing technical specifications documents for developers to guide software development and ensure the output is compatible with the ACCSP Data Housing API. An API specifies the communication protocols that allows two applications to talk to each other. The use of the ACCSP Data Housing API should promote the relatively smooth adaptation of existing applications to meet the Program's minimum standards for data quality (Appendix 4). A recommended component of the Program's outreach program is to meet with potential electronic reporting vendors prior to issuing draft regulations to discuss requirements.

⁵ <http://safmc.net/download/SAFMC-FHER-SubmitVersion.pdf>, page 12

⁶ <http://gulfcouncil.org/wp-content/uploads/Electronic-Reporting-for-For-Hire-Vessels-5-23-17.pdf>, pp. 120-129

Table 2: Required program data elements⁷ for trip-level reporting (reporting every trip) for Gulf and South Atlantic.

DATA ELEMENT	Charter	SRHS
USCG Vessel ID	X	X
State vessel ID	X	NO
Vessel Name	X	X
Captain Name	X	X
Start Port	X	X
End Port	X	X
Gear Code	X	NO
Trip Start Date	X	X
Trip Start Time	X	X
Trip End Date	X	X
Trip End Time	X	X
Fishing Hours	X	NO
Primary Target Species	X	NO
Species Caught on Trip	X	X
Number Kept (by species)	X	X
Number Released (by species)	X	X
Area Fished	X	NO
Latitude	X	X
Longitude	X	X
Primary Fishing Depth	X	X
Minimum Fishing Depth	X	X
Maximum Fishing Depth	X	X
Number of Anglers	X	X
Number of Paying Passengers	X	X
Number of Crew	X	X
Trip Fee	X	NO
Fuel Used	X	X
Price of Fuel	X	X

⁷ Definitions of data elements can be found at: https://safis.accsp.org:8443/accsp_prod/f?p=1490:200:57269431736::NO:RP::

Table 3: Data elements⁸ for Gulf of Mexico Hail-out Requirement

DATA ELEMENT	Gulf Hail-Out ONLY
USCG Vessel ID	X
State vessel ID	X
End Port	X
Trip Type	X
Trip Start Date	X
Trip Start Time	X
Trip End Date	X
Trip End Time	X

⁸ Definitions of data elements can be found at: https://safis.accsp.org:8443/accsp_prod/f?p=1490:200:57269431736::NO:RP::

Data Validation

Self-reported data submitted to the Program have limited uses for management purposes in the absence of validation. The advantages of electronic logbook reporting can only be realized through a mandatory program with adequate mechanisms in place to assure a high level of reporting compliance, regularity, and accuracy. Without the proper safeguards for compliance monitoring, data quality assurance, and enforcement, the resulting data could be biased and potentially less reliable than a survey approach based on probabilistic sampling.

There are three main sampling strategies that should be considered for integration into any electronic logbook catch estimation program: (1) dockside validation, (2) dockside biological sampling of catch, and (3) at-sea observers. Dockside validation would primarily focus on verification of the vessel's effort and reported catch to account for noncompliance or reporting errors. Dockside biological sampling of catch is necessary to obtain lengths, weights, and age structures to determine the size and age distribution and mean size of species landed. At-sea observers record information while fishing is occurring (e.g., lengths and disposition of released fish, sampling location and depth). Observer information is used to evaluate the total harvest of fish stocks, discard mortality rates, effectiveness of management measures to control harvest, and compliance with fishing regulations.

Recognizing that 100% complete, accurate, and timely electronic logbook reporting is not realistic, any census-based program must have procedures in place to identify and correct for non-reporting and reporting errors. This is particularly important given the large number of charter vessels in the Southeast Region and the relatively high turnover rate in the charter business.

Data validation procedures for electronic reporting

- a. Roles and protocols for:
 - i. monitoring and validating catch records,
 - ii. for contacting fishermen who are out of compliance,
 - iii. correcting catch records,
 - iv. monitoring VMS or archival GPS for functionality,
- b. Methodologies to integrate with permits renewal process, and
- c. Estimation methodologies to account for unreported trips and catch.

Data Integration

The Survey Design team discussed a number of issues related to integration of electronic reporting data for catch and effort and hourly location information (in the Gulf of Mexico only) with existing data streams. Issues specifically mentioned included reducing duplication of effort,

avoiding double counting, and integrating Program data with current data streams including permit databases, MRIP, SRHS, and VMS data. In the future, the Program hopes to coordinate shore-based validation activities with existing surveys in all states that have electronic reporting in for-hire fisheries.

One integration method is the trip management system (TMS) / integrated fishery data system⁹ being developed by ACCSP in cooperation with the Greater Atlantic Regional Fisheries Office. Using TMS would also address some of the concerns about duplication of effort and double counting by linking various data streams. Another integration method is the Pre-trip Notification System¹⁰ developed by the Northeast Fisheries Science Center (NEFSC). ACCSP and NEFSC are discussing how the two systems would be integrated for efficient function and ease of use, including generating a unique trip identification number that would propagate to all impacted data systems. The Program will monitor this development process to determine what system will best serve for-hire reporting in the Gulf of Mexico and South Atlantic.

Another important means of data integration is to partner with other management organizations to gather and share data efficiently and consistently. Partnership with other entities would require:

- a. Agreement by the state agencies, or other organizations, to participate in the Program integration work, including adhering to Program methodologies. This should include all state creel surveys, including any state red snapper surveys.
- b. Commitments of staff / time levels to achieve the desired coverage levels.
- c. Understanding of cost and time commitments which also might require funding of partner agency efforts.

Data Calibration

The Survey Design Subcommittee discussed calibration with existing surveys, including MRIP's Access Point Angler Intercept Survey (APAIS) dockside sampling and SRHS. Data calibration should include side by side sampling for a minimum of three years and overlapping coverage levels with other surveys to validate trip report estimates. Additionally, data calibration roles and protocols for calibration methods to existing data streams.

Further discussion is required with NOAA Fisheries' Office of Science and Technology to determine the methods and timelines needed for benchmark and calibration. Calibration cannot occur until there is sufficient validation and compliance.

⁹ <http://www.accsp.org/2018/08/lorem-ipsum-2/>

¹⁰ <https://www.nefsc.noaa.gov/fsb/notification.html>

LOCATION REPORTING

The Gulf Council Electronic For-Hire Reporting Amendment¹¹ includes requirements for vessel operators (charter vessels and headboats) to submit fishing records via NOAA Fisheries approved hardware/software with minimum archived GPS capabilities that provides vessel position (latitude/longitude). The location tracking device must be permanently affixed to the vessel and always on, unless a power-down exemption has been approved. Location tracking issues are addressed more comprehensively in Appendix 10. The two options currently being investigated to record location information are the use of a VMS or an archival GPS device (store and forward device). The VMS devices acquire and transmit the location information in real-time, while the GPS device acquire information in real-time but only transmit information once in cellular range. The VMS device would have the ability to transmit the hail-out and catch reports, while the GPS devices would need an associated tablet-like device to transmit the hail-out and catch reports. However, some areas do not have cellular service even at the dock; vessels in these areas would need to use a satellite-enabled device to submit records before landing (e.g., VMS).

How location tracking data will flow to the data warehouse, e.g. through the NOAA OLE VMS system or some other system, is under development. NOAA Fisheries is currently working with ACCSP to create the protocols to pass the relevant VMS information to the data warehouse¹². The GPS devices collect the location information via satellite, stores the information on the device, and transmits the data via cellular service, informally called store and forward. The transmission occurs when there is sufficient cell signal, as the transmission does not require a strong signal.

Location recording rate

The rate of location recording will be at least once every 60 minutes, similar to the commercial VMS requirements. Under current VMS regulations, this rate may be increased by NOAA Fisheries. Current GPS systems on the market are capable of more frequent ping rates without a significant increase in price. The more frequent ping rates would allow more detailed location tracking which would not only be useful for the captain to view their fishing patterns at a finer scale, but would also be valuable for determining fishing effort, dockside monitoring, law enforcement activities, science and data needs, and management tools.

¹¹ <http://gulfcouncil.org/wp-content/uploads/Electronic-Reporting-for-For-Hire-Vessels-5-23-17.pdf>

¹² A private company that provides software and business services

Options for location tracking devices

There are a number of options available to meet the location tracking requirement; some are single purpose location tracking devices; others are tracking devices that can also transmit data (catch reports). Among the options are:

- 1) Traditional VMS, which transmit only by satellite signal. VMS units approved for use in the Gulf of Mexico commercial fisheries can be found on the NOAA Office of Law Enforcement (OLE) VMS website¹³.
- 2) VMS units that transmit data by satellite or cellular signal.
- 3) Location tracking systems that use cellular signal for data transmission. Location tracking service providers would need to verify the ability of their devices to track location outside cellular range, i.e. receiving and recording satellite location data. Location data stored on the device would transmit data to the service provider when a cellular signal is detected.
- 4) Phones and tablets with location tracking function turned on. Tablet based location tracking service providers would need to verify the ability of their devices to track location outside cellular range, i.e. receiving and recording satellite location data. However, these devices would need to be permanently affixed to the vessel and always transmitting.

Operating under the assumption that suitable location tracking devices are available, a number of factors need to be considered in determining how to meet the regulatory requirement for archivable GPS tracking in the Gulf of Mexico. Any device that would be approved for the Gulf of Mexico system would need the ability to track using satellite signal, as cellular signal is not available at-sea. This includes:

- 1) Combine location tracking / trip reporting devices or use of separate trip reporting and location tracking devices.

Meeting the requirements for reporting and GPS tracking can be done with systems that provide both reporting and location functions (see Appendix 1 for some examples) or by allowing permit holders the option of selecting two devices, one for reporting and one for location. This second option may be a bit more cumbersome, but it may allow flexibility in meeting the location requirement and may result in lower unit costs because the location information would be transmitted through cellular signals.

Some devices may be able to perform both location tracking and catch reporting functions. Devices that can perform multiple functions would reduce the amount of new equipment required on vessels and could assign the same unique trip identification to all the data streams associated with a particular device.

¹³ <https://www.fisheries.noaa.gov/national/enforcement/noaa-fisheries-type-approved-vms-units>

The ACCSP API's for catch report¹⁴ and location¹⁵ data submission provides vendors with the technical specifications needed to submit data for the Program. Bluetooth technology may be an option to submit data in one transmission rather than multiple transmissions.

The data and performance standard option discussed below provides the permit holders the opportunity to choose the system that best meets their individual choices.

Archivable GPS (store and forward) devices

Archivable GPS data that transmits when a cell signal is detected can provide the location information desired for management, enforcement, and science. While this provides continuous location information, the information is not relayed in real-time, but when the vessel is in cellular range. Continuous location data are important for validation that a fishing trip took place. While continuous location information is beneficial, there are additional benefits for real-time reporting of location information. For enforcement purposes, real-time location data are needed to locate vessels for enforcement, both at-sea and dockside, and potentially to assist with search and rescue operations. However, the lack of real-time information would make enforcement of the electronic reporting provisions much more difficult. Dockside monitoring utilizes real-time positions to determine when a vessel would bring catch on-shore. This can be compensated for by utilizing a hail-out or hail-in requirement that mandates fishermen report anticipated (hail-out) or actual (hail-in) time and location of landing. This real-time information with notification of landing time and place would make the Gulf of Mexico program, and resultant catch information, much more useful for management and enforcement. This would, in turn, make the Program goal of more timely, accurate information for management and science a less costly and achievable objective. The South Atlantic program does not require location tracking or hail-out.

Selection or approval of archivable GPS systems

The Implementation Team has discussed how to determine which systems meet the location reporting requirements of the electronic for-hire system. Consideration in selecting approved vendors may include non-technical options such as customer support, secure data transmission, ability to use the information for enforcement, etc. Available options include:

- a. Approve vendors who meet the reporting requirements.

¹⁴ http://www.accsp.org/sites/default/files/safis_utwnified_api_reference_v3.pdf

¹⁵ GDL note – ACCSP doesn't have the location tracking API on their website but will do this on SERO request.

- b. Establish a type approval process, similar to what is currently done with traditional VMS units by NOAA OLE, where vendors submit units for testing, and with testing success are included on a list of available technologies.
- c. Establish data and performance standards and test the various units' ability to meet the standards. This would be similar to what is currently done for eVTR applications in the Greater Atlantic region.

Transmission of location data to ACCSP

Currently, VMS data are sent to NOAA Fisheries VMS contractor's (VISMA) database and are available to enforcement and other authorized users through user interfaces. The data pathway for GPS data to the data warehouse is under development. NOAA Fisheries is currently working with ACCSP and the VMS division to share relevant VMS tracks with ACCSP.

Funding options for location units

Vessel operators will be responsible for all costs (cost of units, installation, and monthly operating costs) associated with catch and location reporting. NOAA fisheries has funding available nationally for reimbursing the acquisition cost of VMS units through the collaboration of the Pacific States Marine Fisheries Commission and NOAA's OLE¹⁶. In FY19, there is funding appropriated for this purpose, but applicants must meet the requirements of the program. Past pilot studies have resulted in VMS units on approximately 750 for-hire vessels in the Gulf of Mexico, which will meet the hail-out requirement with modification to VMS software. This process will be completed prior to program implementation. Also, 1,068 for-hire vessels¹⁷ have commercial reef fish permits which require that they have VMS.

Vessel operators who select archival GPS units are not currently eligible for reimbursement for unit acquisition costs through the VMS reimbursement program.

Location device testing

The SEFSC received a Fisheries Information System (FIS)¹⁸ grant to test various location tracking devices from fall 2018 through mid-2019. Testing, which does not imply any

¹⁶ <http://www.psmfc.org/program/vessel-monitoring-system-reimbursement-program-vms>

¹⁷ <http://gulfcouncil.org/wp-content/uploads/Electronic-Reporting-for-For-Hire-Vessels-5-23-17.pdf>

¹⁸ A NMFS program to work collaboratively with partners at the federal, regional, and state levels to ensure access to comprehensive, high-quality, timely fisheries information.

product endorsement, is being done by placing units from the following vendors to see how they function and to assess how vessel operators judge the various units:

- a. Succorfish SC2¹⁹
- b. RockFleet Rock Seven²⁰
- c. SNAP IT Solar VMS²¹
- d. Pelagic Data Systems Ultra-light Vessel Tracking System²²
- e. Faria-Beede WD300²³
- f. Globalstar SmartOne Solar²⁴; and
- g. Woods Hole Group Hybrid (SAT-GPRS/IoT)²⁵.

The following evaluation criteria are proposed to evaluate the test units:

- a. Cost of unit, including installation costs,
- b. Operating costs, monthly or periodic charges for the unit,
- c. Ease of installation,
 - i. Scale of 1 (hard) to 5 (easy)
- d. Ability of permanent affixing to vessel, and the ease with which this can be done,
- e. Ease of use,
 - i. Captain / operator's perspective
 1. Scale of 1 (hard) to 5 (easy)
 - ii. Agency perspective
 1. Scale of 1 (hard) to 5 (easy)
- f. Dual operating mode, e.g. satellite and cellular,
- g. Connectivity with reporting tool,
 - i. Can the unit provide location data directly to reporting tool?
 - ii. Can the unit provide access to the internet w/o a cellular connection?
- h. Accuracy of data transmission to ACCSP,
 - i. Directly related to the ability to accurately incorporate tracking data into the report.
- i. Ability to match catch and effort data to location data.

Location tracking ongoing issues include:

¹⁹ <http://www.rock7mobile.com/products-rockfleet>

²⁰ <http://www.rock7mobile.com/products-rockfleet>

²¹ <https://solarvms.com/>

²² <http://www.pelagicdata.com/pds>

²³ https://fariabeede.com/2-pages/entelnet_wd300.php

²⁴ <https://www.globalstar.com/en-gb/smartone>

²⁵ <https://www.woodsholegroup.com/pages/sustainable-fisheries-overview.html>

1. An approval process needs to be developed for location tracking devices is being developed to use the NOAA OLE VMS approval methodology for application to GPS units. This process would include encryption, IT security, and ACCSP integration. NOAA OLE will develop regulations for the GPS device review and approval process.
2. Determine VMS/GPS data flow.
3. Determine process for addressing positioning issue, e.g. under roofs and areas where there is no solar charging capabilities or reception.
4. Process to determine the VMS / GPS is installed and working.
5. Develop process for vendor support and required agency actions to address when transmission issues with GPS and vendor occurs

COMPLIANCE AND ENFORCEMENT

Compliance with, and enforcement of, electronic reporting requirements in the for-hire fleets in the South Atlantic and Gulf of Mexico are critical to the implementation and success of these new programs, and the accuracy and utility of the resultant data; the Enforcement / Compliance (Appendix 6).

Experience in the SRHS and Highly Migratory Species eDealer program demonstrate that compliance with reporting regulations requires many elements, including:

- a. Sufficient staff for training, outreach, reminders, and enforcement. Staff requirements should consider partnering with state management agencies where appropriate.
- b. Inclusion of all relevant offices, e.g. Sustainable Fisheries Division SERO, SEFSC, NOAA General Counsel, OLE, and the Permits Office, from the beginning of program development.
- c. Communication with those required to report, including:
 - i. Outreach prior to implementation to convey program requirements and consequences of non-compliance.
 - ii. Ongoing communication among staff, captains, and vessels owners.
- d. Compliance must be established from the start of the program, including permit holds and sanctions for noncompliance. However, a grace period will be part of early implementation to educate captains and vessel owners about reporting requirements, and to bring them into compliance with reporting requirements.
- e. Compliance mechanisms must be designed to require timely report submission. For example, caution should be used in only making permit renewal the compliance point as reports may not be submitted until the permit is up for annual renewal.
- f. Compliance should be automated to the degree possible, such as automated notice of lack of compliance.

The enforcement and compliance work group identified the following issues to assist with compliance with Program requirements.

- a. Identify universe of federally permitted vessels.
- b. Automate compliance protocols to the degree possible.
- c. Devise structured contact protocols for late submission, possible OLE action with non-compliant permit holders, and permit renewal.
- d. Coordination with dockside sampling staff on reminders and compliance actions.
- e. Draft regulations should be reviewed for compliance issues by law enforcement.
- f. Work with NOAA General Counsel and OLE to determine law enforcement and chain of custody requirements for data flows through 3rd parties and NOAA Fisheries.
- g. Develop a flowchart to direct data receivers, port agents, permits office, OLE, and vessel owners on the process of how record keeping and late or missing reports will be handled. The record keeping flowchart must be a detailed record of all communications with a delinquent vessel in order to take law enforcement action.
- h. Develop a summary schedule for sanctions, fishing prohibitions, and restrictions with NOAA GC.

Compliance and enforcement ongoing issues include:

1. OLE / NOAA General Counsel review of program and elements to ensure program enforceability.
2. Is lack of a hail-out considered non-reporting?
 - a. Hail-outs cannot be completed after the fact for those holding a Gulf of Mexico permit.
 - b. Submissions after the fact do not enhance the program as the hail-out is intended for validation purposes.
 - c. Failure to report on hail-out should result in a violation, but not stop permit renewals.
 - d. Consideration of enforcement actions should be given to participants that willfully disregard hail-out requirements.
3. Develop hail-out procedures if VMS or GPS system is not functioning properly.
4. Develop method to communicate hail-out information to enforcement. Investigate following the protocols used for the Individual Fishing Quota program's hail-in notification system.
5. Develop a system for law enforcement to view vessel catch reports and reporting status.
6. Develop a process to document catch discrepancies noted by port agents or law enforcement. Investigate and modify procedures used during the Headboat Collaborative Pilot study.

7. Develop validation protocols for hail-outs for both the VMS and GPS systems. Investigate methodologies such as confirmation numbers, submission checkmarks, and vendor receiver checkmarks.
 - a. Develop the roles and responsibilities for verifying location devices (VMS and GPS devices) are functioning properly.
 - b. Investigate if different pathways are needed for the different systems (VMS vs GPS).
 - c. Determine specific protocols for installation, verification of functionality, power down exceptions, and other related concepts.
9. Develop process for landing location submission, approval, and entry into required data systems. Landing locations will need to be submitted for all Gulf of Mexico permitted vessels regardless of where they are fishing, including ports on the Atlantic coast.
10. Develop method for OLE access to the non-VMS location tracking data.
11. Work with ACCSP on the formal request to access VMS data.

OUTREACH AND ENGAGEMENT

Experience in implementing electronic reporting programs in for-hire fleets in other regions (California, Mid-Atlantic) have demonstrated that both outreach and training are needed to efficiently implement electronic reporting; these issues are discussed in more depth in Appendix 7.

Outreach is directed at making permit holders aware of the requirements of the electronic reporting program. It will educate permit holders on how to submit electronic reports including which programs or applications meet the specifications of the program and where to find them.

As identified in the Quality Management workshop conducted in July 2018, outreach efforts should identify:

- 1) Audiences for outreach,
- 2) Messages for specific audiences,
- 3) Understanding audience self-interests,
- 4) Channels for outreach efforts, and
- 5) Outreach activities.

The training component is aimed at teaching permit holders and fishing captains how to use the programs and applications that meet the specifications. Fishery participants should understand how the changes to the program may allow for better data collection and the benefits quality data may bring to fisheries. Additionally, the expectations of the electronic for-hire programs need to be clearly explained. This includes the potential timeline for data to be incorporated into management decisions. Training can also provide insight to the permit holders on using the data for their own personal use and analysis.

Outreach and engagement should begin well in advance of program implementation to make entities that must report electronically aware of the reporting requirement, approved equipment and application suppliers, and program training opportunities. Education and training need to be ongoing to assist reporting entities, including future new entrants, with training, reporting, and troubleshooting. Some trouble shooting can be addressed by SERO but most hardware and software issues should be addressed by vendors through help desks or calls with technical staff. Best outreach and engagement practices identified through the for-hire electronic reporting process are included in Appendix 7.

Potential tools for Outreach for Gulf of Mexico and South Atlantic For-Hire Electronic Reporting Programs include:

1. Workshops or in-person meetings,
2. Webinars,
3. Letters or emails to permit holders,
4. Print media,
5. Electronic media,
6. Industry partnership, collaboration, and
7. Training videos.

Informational and training webinars have been held by the South Atlantic Council²⁶ related to for-hire electronic reporting. Additionally, SERO has held informational workshops in the South Atlantic²⁷ to make people aware of the electronic reporting requirements that will be implemented in 2019. Additional informational sessions were provided in the Gulf of Mexico in January and February 2019.

Outreach and engagement issues include:

1. Determine roles and responsibilities for answering questions by general topic,
 - a. Catch Reporting questions
 - b. Software problems
 - c. GPS device related questions
 - d. VMS related questions
 - e. Regulation questions
 - f. Consider creation of a toll-free line to direct questions to the appropriate group investigate how the current toll-free lines work in the region
2. Determine methods to engage with state marine fisheries agencies and Fishery Management Councils to make ensure the success of the program.

²⁶ <http://safmc.net/satl-federal-for-hire-electronic-reporting-outreach/>

²⁷ <https://www.fisheries.noaa.gov/event/southeast-electronic-reporting-informational-sessions>

TECHNICAL SPECIFICATIONS AND SERVICE PROVIDER REQUIREMENTS AND ISSUES

Technical Specifications

Technical specifications for the South Atlantic and Gulf of Mexico contain information for service providers to send collected information to the ACCSP data warehouse. The technical specifications are contained in the ACCSP APIs for logbook reports. NOAA Fisheries is working with ACCSP to create similar standards for the hail-out forms and location tracking data for the Gulf of Mexico.

The technical specifications inform service providers about the technical requirements for approval of their software. While discretion is allowed in the format of forms, this information must meet the API standards and be supplied in a timely manner to ACCSP.

The use of technical specifications will allow for-hire operators to choose the reporting platform and application that best meet their business needs. Draft South Atlantic and Gulf of Mexico Technical Specifications are contained in Appendices 8 and 9, respectively.

Service provider requirements and issues

In addition to addressing issues included in the technical specifications, service providers would need to address their ability to provide support services, including:

- Customer service, including help desk and availability for technical support, e.g. daily and 24-hour coverage,
- Training,
- Screen shots to illustrate operation and/or trouble-shooting, and
- Trouble-shooting guides.

Approved vendors will be listed on the SERO website.

In addition to technical specifications and service provider issues, for-hire operators would need to consider some of the following issues when selecting a vendor or a system to complete the electronic reporting requirements:

- Individual needs and vessel requirements,
- Cellular or Satellite Services,
- Installation and long-term operational costs,

- Vendor or system help desk hours, and
- Position location device works in their fishing area (i.e. Bahamas if needed).

BUDGET / PROGRAM COSTS

Implementing Program in the South Atlantic and Gulf of Mexico, consistent with the program goal of improving for-hire estimates, will require significant investments in staff and support to develop, implement, and maintain the program. Importantly, this needs to include a validation component so that landings and effort estimates can be used for management and stock assessments. Without adequate funding, electronically reported data will not be as useful as anticipated, which may result in a decline in support and confidence in the program. Furthermore, if the data are not used, many stakeholders may be disappointed in how valuable the self-reported catch data are to the management and science process.

To date NOAA Fisheries has obtained funding for Program from two FIS grants. Grant proposals were written by SERO and submitted in both fiscal years 2017, 2018, and 2019, resulting in funding for those three years. The funds have been spent or obligated for a strategic planner to aid in the development of the system, infrastructure, and outreach materials and travel. Regional Office staff are seeking other funding avenues to implement the for-hire electronic reporting program.

Program and personnel costs for compliance and validation aspects of Program will be substantial, and will vary with levels of coverage for biological and validation agents. For the South Atlantic component of the Program, estimates of start-up and first year costs are \$3,271,850 and ongoing annual costs are \$2,473,680. For the Gulf of Mexico component of the Program, estimates of start-up costs are \$1,879,192 and ongoing annual costs are \$1,456,320. The annual cost estimates do not factor in inflation, which will increase annual program costs over time. These cost estimates were developed by SEFSC and SERO staff to include data management, outreach, training, enforcement, validation, and compliance efforts. The primary difference in costs to NOAA Fisheries between the Council regions is the location tracking requirement in the Gulf of Mexico which makes validation, compliance, and enforcement efforts less costly. The cost of equipment and software required to submit catch reports, location data, and hail-outs will be the responsibility of the vessel owner.

Decisions on scaling the Program based on available funding will be required. Not implementing the program in either or both regions because of inadequate funding could result in a program that does not provide better data for management or science. Supporters of electronic reporting in the for-hire fleet have expectations about timely and efficient reporting from the Program, but there are also expectations of better, usable data to improve stock assessments and management.

Budget / cost ongoing issues include:

1. How the Program will be implemented and function under different funding levels, e.g. incremental funding increases or no additional funding.
2. Work with leadership to develop a strategy to secure long-term funding needed to implement Program in the South Atlantic and Gulf of Mexico.
3. Identified potential costs in the VMS/GPS staff to ensure VMS/GPS installation and activation, monitor the functioning of the unit, and process power-down exceptions.
4. Ongoing outreach and engagement costs need to be identified.

PROGRAM TIMELINES

Program implementation will occur in late 2019 or 2020 after logistical, funding, and regulatory changes are put in place. There is ongoing work on these issues that need to be completed prior to implementation, including data flow, location tracking device testing and evaluation, cooperative arrangements with program partners as needed, and funding and staffing necessary for program implementation. Following program implementation, data validation procedures may take up to three years.

Importantly, the implementation date is when the appropriate regulations become effective. It does not mean that all impacted for-hire operations would be reporting completely and correctly on the first day; experience with other significant regulatory actions suggest that early implementation would include some of the following elements:

1. Education of for-hire operators about program requirements and hardware/software needed to comply requirement.
2. Bringing for-hire operators into compliance through contact, education, and, if needed, appropriate law enforcement actions.
3. Ongoing coordination with the Mid-Atlantic Council, Gulf Council, South Atlantic Council, Highly Migratory Species Division, and state agencies.
4. Feedback from participating captains to make program adjustments and to initiate subsequent plan amendments.

CONCLUSIONS

Implementing electronic reporting in the federal for-hire fleets in the South Atlantic and Gulf of Mexico in a way that improves the timeliness and quality of data for management and science is a significant, complex undertaking. All of the issues discussed in this development plan must be addressed at the right time to successfully implement electronic reporting in the South Atlantic and Gulf of Mexico. Some of the issues will be addressed over time, such as increasing knowledge of the electronic reporting requirement and increasing compliance with reporting requirements and ramping up the program when funding becomes available. Other program elements must be addressed prior to program implementation. This includes adequate program funding and staff support to initiate the program, and coordination among relevant NOAA offices.

The development of the Program started in mid-2017, after approval of Fishery Management Plan amendments by the Gulf and South Atlantic Councils. The Councils began the amendments jointly in 2014 but separated their respective efforts resulting in significantly different electronic reporting programs. This process complicated the work of NOAA Fisheries to review the amendments, and to implement the programs after plan approval. Both amendments have been approved by the Secretary of Commerce and the programs are going through rulemaking.

Progress to date has resulted in a number of concrete outcomes needed for Program implementation. This includes survey design elements, data housing decisions, outreach and engagement efforts and ongoing needs, location tracking device information and testing, draft budgets for program implementation in the Gulf of Mexico and South Atlantic.

Need for ongoing program improvement

Validation and program adjustments is needed in both regions so that the electronic reporting programs can provide catch and effort data for both management and science. Program adjustments may be met by resistance or issue fatigue by some stakeholders who may feel that they have already made significant changes to their operations in the initial implementation of the electronic reporting program. NOAA Fisheries should continue to stress that these programs will require additional changes for the data to be useful. One means of ongoing program improvement could include an independent verification and validation (IVV) review. IVV is a review process performed by an organization that is technically, managerially, and financially independent of the development organization. The result of the IVV review is recommendations on program design and implementation to achieve the best result possible. An IVV review was contracted by the Pacific Island Regional Office for its Fishery Observer Program electronic reporting system. The review period was one year.

Program could use a similar IVV review to improve electronic reporting programs in the South Atlantic and Gulf of Mexico, which would result in recommendations on improving these programs. Given the complexity of the Program, a “fresh eyes” review of the work done by the Councils and NOAA Fisheries could yield suggestions on program development and implementation. An IVV review of the Program should include agency and Council decisions. An IVV process could be conducted prior to program implementation, which would result in increased costs and likely a delay in program implementation. An IVV review could also be conducted after a year of program implementation to improve the program as it is running. The latter process would be a “mid-course correction” after a year of experience and learning. As the Program moves forward, IVV could help with implementation and improvement efforts. Some IVV questions include:

1. Should the Program be reviewed using the IVV process, or would it be conducted in conjunction with MRIP certification?
2. Can an IVV review be conducted while Program is being implemented?
3. What would the cost and time implications be of conducting an IVV review of the Program process?

PHASE II: NEXT STEPS

Phase II of the Program consists of the steps needed to implement the Program, and in early implementation steps. This will include:

- 1) Based on outreach discussion in Quality Management Professional Service Group data workshop, we will focus on audiences, messages, self-interest, channels, and activities identified in the workshop report. These items will be included in the implementation plan. This should include:
 - a. Communication with vessel owners and captains regarding program requirements, equipment and applications for catch and location (Gulf of Mexico permit holders only) reporting,
 - b. Communication with vessel owners and captains on Program planning and timelines to get their feedback on program requirements and logistics,
 - c. Communication with South Atlantic and Gulf Councils on Program timeline and requirements, and how the Councils want to be included in ongoing implementation process.
- 2) Develop and approve technical specifications for reporting applications (South Atlantic and Gulf of Mexico) and location reporting devices (Gulf of Mexico permit holders only) in advance of catch reporting.

- 3) Coordinate with MRIP on data validation process for Program data. Data validation also needs to include collection of biological samples to develop accurate weight estimates. The timeline for development of the validation process should be done in 2019.
- 4) Program and the SEFSC recommend that the South Atlantic Council revisit the requirement to use a hail out process as well reporting before fish are off-loaded at the end of each trip to make validation more fiscally and logistically feasible. A potential hail-out process does not necessarily require a VMS unit; a tablet or phone-based system could be used to meet this requirement. Additionally, revisiting the weekly reporting requirement of trip level data would make the validation process more robust, efficient, and timely than is possible under the current regulatory structure.
- 5) Ongoing implementation of the Program so that the resultant catch and effort information can be used in management and science will take time to determine program requirements, obtain adequate funding for program implementation, conduct outreach and engagement to make people aware of reporting requirements, sufficient compliance to generate catch and effort information, and improve the program for future improvement. This needs to be coordinated with OLE including VMS programs, Office of Sustainable Fisheries, and the Councils.

APPENDICES

- Appendix 1: Organizations that participated in various Program development activities
- Appendix 2: Program project team participants
- Appendix 3: Survey Design White Paper
- Appendix 4: Data Housing White Paper
- Appendix 5: Compliance and Enforcement White Paper
- Appendix 6: Outreach and Engagement White Paper
- Appendix 7: South Atlantic Technical Specifications Paper
- Appendix 8: Gulf of Mexico Technical Specifications White Paper
- Appendix 9: Location Tracking Device White Paper
- Appendix 10: Glossary of Terms