



**NOAA**  
**FISHERIES**

# **West Coast Region Electronic Technologies Implementation Plan**

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# Acronyms

Acronyms	
CDFW	California Department of Fish and Wildlife
CPFV	Commercial passenger fishing vessels
DGN	Drift gillnet
etix	Electronic fish ticket
etickets	Electronic fish ticket
elogbooks	Electronic logbooks
EM	Electronic monitoring
ER	Electronic reporting
ET	Electronic technologies
EMSP	EM Service Plans
ESA	Endangered Species Act
EFPs	Experimental fishing permits
FY	Fiscal year
FMPs	Fishery management plan
GCNW	General Counsel Northwest Section
GEMPAC	Groundfish Electronic Monitoring Policy Advisory Committee
HMS	Highly migratory species
IFQ	Individual fishing quota
IT	Information technology
JSON	JavaScript Object Notation
MSA	Magnuson-Stevens Act
MLS	Marine Logs System
OLE	NOAA Fisheries Office of Law Enforcement
WCR	NOAA Fisheries West Coast Region

Acronyms	
NWFSC	Northwest Fisheries Science Center
OPTECS	Observer Technology Enhanced Collection System
OTS	Observer Trip System
ORCA	Onboard Record Collection Application) is an electronic reporting application for Windows 10 ruggedized Dell Laptop tablets being
API	Open Application Programming Interface
PacFIN	Pacific Fisheries Information Network
PIROP	Pacific Islands Regional Observer Program
PSMFC	Pacific States Marine Fisheries Commission
RecFIN	Recreational Fisheries Information Network
VMP	Vessel monitoring plans
VMS	Vessel monitoring system
VMS	Vessel monitoring system
VMM	Vessel movement monitoring
WCGOP	West Coast Groundfish Observer Program

# 1 Executive Summary

In May 2013, the National Marine Fisheries Service (NOAA Fisheries) issued Policy Directive 30-133, Policy on Electronic Technologies and Fishery-Dependent Data Collection. This Directive called for the development of Regional Electronic Technology Implementation Plans to address regionally specific fishery data collection issues and needs. The NOAA Fisheries West Coast Region (WCR) published a Regional Electronic Technologies (ET) Implementation Plan in 2015 describing a vision for implementation of ET in west coast fisheries for 2015-2024. In 2019, NOAA Fisheries renewed this ET Policy and called for all Councils and NOAA Fisheries Regions to review and update their ET Plans annually in the spring time frame. The WCR and Pacific Fishery Management Council intended to review and update the 2015 ET Plan during 2020-2021, but this effort was delayed to 2022 to prioritize urgent actions to support west coast fisheries during the COVID-19 global pandemic. The Pacific Fishery Management Council intends to take up review of the ET Plan in 2022 and may publish a new west coast ET Plan at that time. Since the 2015 ET Plan was published, the Pacific Fishery Management Council, NOAA Fisheries, PSMFC, and west coast states have taken a number of steps to expand the use of ET in west coast fisheries, which are further detailed in this document.

Major actions to implement and expand ET in west coast fisheries since 2015:

- West coast states expanded mandatory electronic fish ticket (etix) reporting for commercial fisheries. Etix is now mandatory for all fisheries in Oregon and California, and for commercial groundfish and halibut in Washington.
- California implemented an electronic logbook for commercial passenger fishing vessels.
- The Pacific Fishery Management Council recommended and NOAA Fisheries implemented increased vessel monitoring system (VMS) position transmission rates to improve enforcement for the groundfish fishery.
- The Pacific Fishery Management Council recommended and the National VMS Program authorized the use of low cost cellular-based units to meet VMS requirements.
- The Pacific Fishery Management Council recommended and NOAA Fisheries is implementing an electronic monitoring (EM) program for groundfish catcher vessels to meet the requirements for 100 percent at-sea monitoring in the Pacific Coast Groundfish Trawl Catch Share Program.
- The West Coast Groundfish Observer Program and West Coast Regional Observer Program have developed electronic reporting applications for use by observers in groundfish and highly migratory species (HMS) fisheries.
- NOAA Fisheries and PSMFC are developing an electronic logbook for the limited entry and open access fixed gear non-nearshore groundfish fishing fleets.

## 2 Introduction

In recent years, NOAA Fisheries and the Pacific Fishery Management Council have implemented marine fisheries management regulations that require near real-time reporting of retained catch fishery-related impacts by species at the vessel level. These regulations have challenged the methodological and budgetary limits of contemporary data collection methods such as on-board observers, self-reporting, dockside monitoring, and filing landing receipts. Fishery managers are striving for greater monitoring, accounting, and reduction of bycatch and increased target stock catches via increasingly more sophisticated regulatory approaches. Electronic Technologies (ET) are emerging as a more effective and efficient solution to meet these challenges and demands. For the purposes of this plan, ET includes vessel monitoring systems (VMS), other vessel movement monitoring (VMM) technology, electronic logbooks (elogbooks), video cameras for observer-type electronic monitoring (EM), electronic fish ticket (etickets) systems and other technologies that provide EM and electronic reporting (ER). Given governmental and industry budget constraints, the use of ET is emerging as a more effective and efficient solution to address demand for more timely and accurate data collection. Additionally, the potential ability for ET to provide fishery-dependent data that are spatially explicit could be transformative for stock assessments.

NOAA Fisheries issued Policy Directive 30-133, Policy on Electronic Technologies and Fishery-Dependent Data Collection in May 2013 and renewed it in May 2019. This Directive called for the development of Regional Electronic Technology Implementation Plans to address regionally specific fishery data collection issues and needs. Importantly, the Policy Directive did not state that electronic technologies were appropriate for all of a region's fisheries or fishery management plans (FMPs). Rather, it called for the identification of fisheries or FMPs for which electronic technologies are appropriate and planning for organized regional implementation.

A truly regional ET implementation plan needs to take into account the roles of several key partners in addition to NOAA Fisheries. The Pacific Fishery Management Council is responsible for the policy role in the development of the regulations necessitating the collection of data and, in some cases, regulatory requirements for the use of ET. While there is always a linkage between Pacific Fishery Management Council management policy and the design of the data systems, federal, state, and tribal agencies are responsible for implementing fishery monitoring systems. The States of Washington, Oregon, and California, and Northwest Indian Tribes have important roles as the original collectors of most shore-based catch accounting information. In that regard, the Pacific States Marine Fisheries Commission (PSMFC) has assisted NOAA Fisheries in implementing data collection systems. The PSMFC also has undertaken the important long-standing role of being the clearinghouse for West Coast fishery catch information from NOAA Fisheries, state, and tribal systems. Most recently, the PSMFC has played a key research role in the development of ET data and technology from the use of camera-based electronic monitoring systems. This research supported the 2014 recommendation to NOAA Fisheries by the Pacific Fishery Management Council to implement experimental fishing permits (EFPs) to continue testing EM in the trawl sector of the groundfish fishery. These EFPs were in turn used to inform the Pacific Fishery Management Council and NOAA Fisheries EM policy and regulations to be implemented in 2022.

ET Plan information distribution and outreach to the public is important in the successful implementation of the Plan. The Pacific Fishery Management Council forums will serve as the primary public outreach mechanism, including the Pacific Fishery Management Council and advisory body meetings, website postings, and between meeting informational distributions. (<https://www.pcouncil.org/>). The NOAA Fisheries Office of External Affairs will also provide information and outreach to the public on this Plan.

Fish manager, enforcement, industry, public, and academic access to data will depend on federal and state confidentiality policies. As new technologies and databases are developed, confidentiality policies will need to be reviewed and updated. To the extent possible, Pacific Fisheries Information Network (PacFIN: <http://pacfin.psmfc.org/>) and Recreational Fisheries Information Network (RecFIN: <https://www.recfin.org/>) will be expanded to include data that results from this Plan and to report on status of the technologies employed.

NOAA Fisheries and the Pacific Fishery Management Council intended to review and update the 2015 ET Plan during 2020-2021, but this effort was delayed to 2022 to prioritize urgent actions to support west coast fisheries during the COVID19 global pandemic. The Pacific Fishery Management Council intends to take up review of the ET Plan in 2022 and may publish a new west coast ET Plan at that time. Since the 2015 ET Plan was published, the Pacific Fishery Management Council, NOAA Fisheries, PSMFC, and west coast states have taken a number of steps to expand the use of ET in west coast fisheries, which are further detailed in this document.

## 3 Vision For 2021-2025

As described in the 2015 ET Plan, the vision for 2021-2025 was to expand current projects and begin to implement advanced ET projects. NOAA Fisheries, the Pacific Fishery Management Council, and PSMFC are working on several projects to implement and expand ET in west coast fisheries in 2021 and 2022, including EM for the Pacific Coast Groundfish trawl fishery and electronic logbooks for the Groundfish fixed gear fisheries. NOAA Fisheries and the Pacific Fishery Management Council intend to review the 2015 ET Plan in 2022 and may revise its vision for 2022-2024 at that time.

## 4 Regional ET Priorities

The NOAA Fisheries and the Pacific Fishery Management Council intend to review the 2015 ET Plan in 2022 and may identify new or revised priorities at that time. Some objectives listed in the 2015 ET Plan include:

1. Expansion of current projects. Reviewing and refining projects implemented, developing additional recreational projects; developing, revising, and integrating databases; and developing data access policies.
2. Integration of electronic fish ticket, electronic logbook, and other data such as VMS data with existing state and federal reporting and permit systems.
3. Development of new confidentiality, IT security, data storage, and data sharing policies with NOAA Fisheries, the Pacific Fishery Management Council, states, PSMFC, and Tribes (including Northwest Indian Fisheries Commission), industry, and public.
4. Develop data standards for industry groups who choose to develop their own electronic logbooks and other ET tools, to encourage investment and increase the suite of options available to industry to meet regulatory requirements.
5. To improve access and allow greater use of fishery-dependent data, development of secured databases access portals with appropriate restriction levels for: state, tribal, and Federal fish managers and stock assessors; state and federal law enforcement officials; Industry; academics; and the general public.

## 5 Council Actions

Since publication of the 2015 ET Plan, the Pacific Fishery Management Council has taken several actions to advance implementation of electronic technologies in west coast fisheries.

- From 2014-2016, the Pacific Fishery Management Council developed management measures to address a range of vessel and gear movement issues and aggregated these measures into a “vessel movement monitoring” regulatory amendment, which was approved by the Pacific Fishery Management Council in April 2016. This action:
  - » Increased the position transmission rate for certain vessels using NOAA Fisheries type-approved VMS units, including limited entry groundfish vessels, open access vessels using non-groundfish trawl gear (ridgeback prawn, California halibut, and sea cucumber trawl), and any vessels that use open access gear targeting groundfish or that have groundfish bycatch (salmon troll, prawn trap, Dungeness crab, halibut longline, California halibut line gear, and sheephead trap);
  - » allows midwater trawl vessels participating in the Pacific whiting fishery to change their landing declarations while at sea;
  - » exempts groundfish trawl vessels from observer coverage while testing authorized fishing gear; and,
  - » allows shorebased Individual Fishing Quota fixed gear vessels to deploy pot gear in one management area while retrieving gear from another management area on a single trip.
 NOAA Fisheries WCR published a final rule implementing these measures June 2020 (85 FR 35594).
- The Pacific Fishery Management Council also recommended the use of new, lost cost cellular-based VMS units, but NOAA Fisheries was unable to approve their use for only the Pacific Coast groundfish fishery. Instead, the national VMS Program published a proposed and final rule amending the existing national type approval regulations for VMS units to include cellular-based VMS units (85 FR 40915; July 8, 2020).
- In 2016, the Pacific Fishery Management Council took final action on a regulatory amendment to the Pacific Coast Groundfish FMP that makes EM an option for midwater trawl vessels in the Pacific whiting fishery and fixed gear vessels in the Individual Fishing Quota (IFQ) fishery. NOAA Fisheries WCR published a final rule in June 2019 approving this program. After a one-year delay, the EM program is scheduled to begin January 2022.
- In 2017, the Pacific Fishery Management Council took final action on a regulatory amendment to expand the Pacific Coast Groundfish EM Program to vessels using bottom trawl and non-whiting midwater trawl gear in the IFQ fishery. NOAA Fisheries WCR is currently working on rulemaking to implement these regulations, with implementation scheduled for January 2022.
- The Pacific Fishery Management Council recommended refinements to the Groundfish EM Program regulations at its April and June 2020 meetings. NOAA Fisheries WCR is working on rulemaking implementing these changes, which are intended to be effective January 2022.
- In the 2009-2010 Groundfish Harvest Specifications and Management Measures action, the Pacific Fishery Management Council recommended that NOAA Fisheries implement a logbook requirement for the limited entry and open access fixed gear non-nearshore fishing fleets. However, due to workload and funding constraints, a logbook was never implemented. Since that time, the Pacific Fishery Management Council’s Endangered Species Act (ESA) Workgroup has recommended a logbook to assist in estimating effort in fixed gear fisheries. The most recent Biological Opinion on the effects of the Pacific Coast Groundfish fishery on ESA-listed seabirds and sea otters requires NOAA Fisheries to implement a logbook for longline fisheries to collect information on fishing efforts by unobserved vessels (USFWS, 2017). NOAA Fisheries will be initiating rulemaking in 2021 and has secured funding for Pacific States Marine Fisheries Commission to develop an electronic logbook for the groundfish fixed gear fisheries.

## 6 Electronic Technologies Used in the Region

### 6.1 Summary of Fisheries using Electronic Monitoring

NOAA Fisheries is in the process of implementing an EM program for catcher vessels in the mothership and shorebased IFQ sectors of the Pacific Coast Groundfish trawl fishery. The EM program will allow vessels the option to use EM in lieu of human observers to meet the requirements for 100 percent at-sea monitoring of the Trawl Rationalization Program. Vessels will be able to use EM on trips using midwater trawl, fixed gear, or bottom trawl gear, targeting a range of species in the groundfish fishery and delivering to shoreside and at-sea processors. The EM program is the culmination of an EFP project from 2015-2021, involving fishing industry representatives, vessel owners, and captains, NOAA Fisheries, PSMFC, and EM service providers, and other EM projects by the whiting industry, providers, and PSMFC dating back to 2004. Lessons-learned from the EFP were used to develop the specific program requirements and regulations for the EM program that were implemented through three rulemakings. NOAA Fisheries will be receiving and reviewing applications from EM services providers and vessel owners in 2021 to begin fishing with EM in 2022. In the program, vessel owners are required to procure equipment and data review and reporting services from a NOAA Fisheries-permitted EM service provider, in lieu of an industry-funded observer, to document the vessel's discards of IFQ species. The data reported by providers from self-reported logbooks and reviewing EM data will be used to debit discards from vessels IFQ accounts and cooperative allocations.

Future phases of this project are likely to focus on modifications to catch handling requirements to increase participation by bottom trawl vessels, and development of machine vision tools that could expedite and reduce costs of the video review.

### 6.2 Summary of Commercial Fisheries using Electronic Reporting

NOAA Fisheries will be initiating rulemaking in 2021 to implement a logbook requirement for limited access and open access groundfish fixed gear fleets. PSMFC will also begin development of an e-logbook application with funding from the internal NOAA Fisheries Fishery Information Systems/ Electronic Technologies/Catch Shares Program funding competition to be deployed to meet the logbook requirements in these fleets. PSMFC will also be working with west coast states that have a fixed gear logbook to integrate state logbook requirements to streamline reporting for fixed gear vessels between state and federal requirements. It is hoped that the new fixed gear e-logbook may then be modified in future project phases to replace paper logbooks in the groundfish trawl fishery and HMS fisheries.

The West Coast Groundfish Observer Program (WCGOP) is developing a web-based mobile application (OTS) that will streamline reporting requirements for groundfish vessels. The application will provide fishers a means to log their activity with WCGOP and receive immediate notification whether observer coverage is required. The application provides a mechanism for fishers to make VMS declarations to the Office of Law Enforcement in lieu of a separate phone call. WCGOP will leverage this database architecture and application for implementation of the groundfish EM program in 2022. EM vessels will be able to upload a picture of their logbooks from EM trips to OTS, where they will be available to NOAA Fisheries staff, OLE, and the vessel's EM service provider. This will eliminate the need for the vessel to mail the paper logbook after the trip.

### 6.3 Summary of For-Hire and Recreational Fisheries using Electronic Reporting

There are no federal electronic reporting requirements for west coast for-hire or recreational fisheries. California based commercial passenger fishing vessels (CPFV, or party/charter boat) are required to use the Marine Logs System (MLS) for electronic reporting. The MLS includes a web-based app that allows CPFV operators to record and submit fishing data to CDFW electronically. Using a mobile device such as a tablet or smartphone, CPFV operators

can record fishing data in real time, even without an Internet connection, and then submit the information electronically to CDFW at the conclusion of their fishing trip (CDFW, 2018: <https://cdfwmarine.wordpress.com/>).

## 6.4 Summary of Federal Dealers / Processors / Tenders using Electronic Reporting

The West Coast Region does not require federal permits or federal landing receipts for most receivers of federal landings. Federal managers instead rely on existing state permit and reporting requirements to track and manage federal landings. However, federal regulations require a federal First Receiver Site License for receivers of federal landings from the IFQ sector of the Pacific Coast Groundfish fishery. IFQ first receivers are also required to report IFQ landings via electronic fish tickets within 24 hours. These requirements have been in place since implementation of the IFQ program in 2011. In 2017, federal electronic fish ticket requirements were expanded to all processors receiving landings of sablefish from federal limited entry and open access fisheries. IFQ and sablefish processors use the E-tix application developed and managed by the Pacific States Marine Fisheries Commission.

In recent years, the west coast states have been expanding electronic fish ticket requirements in state fisheries. As of 2021, electronic fish tickets are required for all species in Oregon and California. In Washington, electronic reporting is mandatory for all commercial groundfish and halibut landings and voluntary for other species. State processors use the PSMFC E-tix application and the data is transferred to the states.

## 6.5 Summary of Observer Programs / Study fleet(s) Electronic Reporting Programs

For several years the NWFSC has been developing and improving the Observer Technology Enhanced Collection System (OPTECS), an application to electronically document catch data at-sea on commercial vessels. The OPTECS software and ruggedized tablet have been issued to all program observers in 2020 for documenting both trawl and fixed gear fisheries, along with a streamlined data form version used solely as backup for tablet failure. The 2021 OPTECS software, with numerous improved user interface features, has been disseminated program-wide, fully integrated into all new observer trainings, and is now the sole observer data entry platform. Future development is in the works for a new iteration of OPTECS, which is part of a larger NWFSC transition toward progressive web applications.

ORCA (Onboard Record Collection Application) is an electronic reporting application for Windows 10 ruggedized Dell Laptop tablets being developed for the Deepset Buoy Gear and Longline fisheries. The West Coast Region Observer Program (WCROP) in Long Beach, California and the Pacific Islands Regional Observer Program (PIROP) in Honolulu, HI are working with PSMFC to develop a single platform for both programs. Deepset buoy gear (DSBG) is in the beginning of field testing and longline is in the beginning development stages. Use of RFID tags for tracking DSBG sets and hauls is in the development stage and will hopefully be deployed by fall 2021. This work has been funded by FIS.

## 6.6 Summary of VMS Programs

Vessels participating in the limited entry groundfish fishery, open access vessels using non-groundfish trawl gear (ridgeback prawn, California halibut, and sea cucumber trawl), and any vessels that use open access gear targeting groundfish or that have groundfish bycatch (salmon troll, prawn trap, Dungeness crab, halibut longline, California halibut line gear, and sheephead trap), are required to install a NOAA Fisheries Office of Law Enforcement (OLE) type-approved mobile transceiver unit and to arrange for a NOAA Fisheries OLE type-approved communications service provider to receive and relay transmissions to NOAA Fisheries OLE prior to fishing. These units automatically record a vessel's position (i.e., the vessel's geographic location in latitude and longitude coordinates), and transmit those coordinates to a communications service provider.

A recent final rule (84 FR 54579) increased position transmission rates from once to four times an hour, 24 hours a day throughout the fishing year for vessels participating in the groundfish fishery. This change became effective September 9, 2020. The Pacific Fishery Management Council recommended increasing the vessel position

frequency to increase NOAA Fisheries's ability to enforce fishing activity around restricted areas. This increase in frequency would produce more course, location, and speed data to improve NOAA Fisheries's ability to identify whether vessels are continuously transiting in restricted areas or not.

VMS is also required on drift gillnet (DGN) vessels participating in Highly Migratory Species fisheries and HMS vessels larger than 24 meters that fish in the Eastern Pacific Ocean for tuna.

# 7 Implementation Challenges of ET Programs

No updates at this time.

# 8 Research and Development

No updates at this time.

# 9 Data Integration and Modernization

No updates at this time.

# 10 Data Standards and Interoperability of ET Systems

For the Pacific Coast Groundfish EM Program, NOAA Fisheries WCR has endeavored to establish performance standards and specifications for outputs, rather than detailed specifications for software and databases that will be used by EM service providers to analyze and report EM data. This approach is intended to provide flexibility for different providers to meet the requirements in different ways, while still providing the data quality necessary for management. For example, the EM program regulations establish the general responsibilities for EM service providers and vessels, but delegates certain specifics of individual provider and vessel operations to EM Service Plans (EMSPs) and Vessel Monitoring Plans (VMPs). NOAA Fisheries will review the VMPs and EMSPs as part of vessel owner and provider applications to ensure that they meet all required components and that the proposed operations will achieve the purpose of the EM program. NOAA Fisheries WCR has developed guidelines to assist vessel owners and EM service providers in developing their VMPs and EMSPs. The guidelines describe the requirements for VMPs and EMSPs, as well as best practices, recommendations, and other information that NOAA Fisheries will use to evaluate the proposed plans and to evaluate the performance of vessels and EM service providers. An EM service provider or vessel owner may propose alternative, but equivalent methods to any of the recommendations in guidelines, and NOAA Fisheries may consider and approve those methods if they achieve the purpose of the EM program.

In addition, all logbook, trip and catch summary data will be submitted by EM service providers via an OpenAPI using a JSON format. Providers will be able to submit requests via the API and retrieve basic trip information necessary for submitting data such as the TripID. The TripID is critical to linking logbook, trip and catch summary data within the WCGOP database.

# 11 Costs of EM Programs

Region For the Groundfish EM EFP Program (2015-2021), government costs consist of NOAA Fisheries's own costs plus PSMFC's costs for video review, data storage, and reporting. NOAA Fisheries's costs for the EM EFP program have not been charged to cost recovery, but NOAA Fisheries's costs for administering the regulatory EM program beginning in 2022 will be charged to cost recovery as required by the MSA. During 2015-2021, NOAA Fisheries's own costs consisted of the labor to administer the EM EFP program, including developing and issuing EFPs and VMPs, reviewing drive reports and EM data provided by PSMFC, and conducting outreach with captains. Most of these duties were completed by Permits Branch staff, but also included participation from the Office of Law Enforcement (OLE), General Counsel Northwest Section (GCNW), West Coast Groundfish Observer Program (WCGOP), the Groundfish/CPS Branch, and Northwest Fisheries Science Center (NWFSC) Information Technology (IT).

NOAA Fisheries staff have also been working on the development of the regulations for the EM program, including attending Pacific Fishery Management Council and GEMPAC meetings, completing rulemaking packages and associated analyses, and planning for implementation. NOAA Fisheries staff time working on the regulations has been charged to cost recovery. Time has been charged to the shorebased IFQ sector (75%) and the mothership sector (25%) based on the proportion of EM seadays. It was not possible to exactly determine the amount of time spent by NOAA Fisheries staff on the EM EFP program or the EM regulations, because NOAA Fisheries staff time is not tracked at this level. The best estimate is that the EM program as a whole, including EM EFPs and EM regulation development, has annually accounted for approximately 1.5 FTEs from 2015-2020.

EM EFP video review costs in Table 6 show the amount of funding NOAA Fisheries provided to PSMFC for the EM EFP annually since 2015. PSMFC's activities have included logbook data entry, review of the video data, reporting discard estimates to NOAA Fisheries, data storage, and analysis to support reports to the Pacific Fishery Management Council and rulemakings. NOAA Fisheries provided a lump sum in fiscal year (FY) 2016 to fund PSMFC's work on the EM EFP FY 2016-2019. These funds were supplemented in FY 2018, FY2020, and FY2021. This results in an annual average of \$435,000 for PSMFC's data services costs for the EM EFP program.

In FY2019, the NWFSC received \$410,000 to cover one-time start-up costs for the regulatory program to begin in 2021, including a temporary program coordinator (\$150,000), contract labor for database development (\$160,000), and equipment (\$100,000). Beginning in FY 2022, the NWFSC anticipate approximately \$580,345 in annual NOAA Fisheries costs to administer the EM program. Approximately \$210,286 of that may be recovered through cost recovery fees. NOAA Fisheries's annual administrative costs are composed of staff time to review EM service provider and vessel owner applications, EMSPs and VMPs, to follow-up on drive reports and compliance issues inseason, and to conduct the secondary review and data processing. NOAA Fisheries also anticipates \$430,345 for database development and maintenance, licensing, and equipment. Database costs are expected to decline over time as the program matures and tasks transition from development to maintenance.

## 12 EM Cost Transition Plans

NOAA Fisheries has provided federal funding through a grant to PSMFC for the video review, reporting, and storage for the EM EFP program since 2015. The EM EFP program is set to expire in December 2021 and EM vessels will transition to operating under regulations January 1, 2022. Beginning January 1, 2022, vessel owners will be responsible for securing EM equipment, field services, and data services from a NOAA Fisheries-permitted EM service provider at their own expense as a condition of participating in the EM program.

# 13 Regional Communications and Outreach Plan

NOAA Fisheries has made routine annual progress reports on the ET Plan to the Pacific Fishery Management Council since 2015. NOAA Fisheries and the Pacific Fishery Management Council will discuss future regional communications and outreach plans when the Pacific Fishery Management Council reviews the ET Plan in 2022.

# 14 List of Tables

**Table 14.1. Summary of Fisheries Participation in Electronic Monitoring Programs**

Fishery	# of ER Vessels	# of Vessels in Fishery	Observer Coverage	EM Coverage	% video Reviewed	Program type / date	Purpose of EM
Groundfish	51	84	100%	100%	100%	EFP 2015-2021	Discard accounting

**Table 14.2. Summary of Participation in Electronic Reporting Programs for For-hire and Recreational Fisheries**

Fishery/ survey name	Mode	# ER Vessels	# Vessels in Fishery	Data Submitted to /Managed by	Required / Volunteer	Reporting Frequency (Haul, trip, week, month)	Purpose of EM	Comments
California Commercial Passenger Fishing Vessels	Web	>60% of Trips from ER	552	CDFW	Volunteer	Monthly Required, Trip Electronic	No data entry, near real time data	

**Table 14.3. Summary of Participation in Electronic Reporting Programs for Federal Dealers/Processors/Tenders**

Dealer or Processor or Tender	# of Processors	Data Submitted to/ Managed By	Required/ Volunteer	Reporting Frequency (day, week, month)	Purpose of ER	Comments
Coastal Pelagic Species	128	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	
Crab	312	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	
Groundfish	362	PSMFC	Required	IFQ/Sablefish 24 hours, non-IFQ/Sablefish WA/OR 24 hours, CA 3 days,	Catch accounting	
Salmon	272	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	

Dealer or Processor or Tender	# of Processors	Data Submitted to/ Managed By	Required/ Volunteer	Reporting Frequency (day, week, month)	Purpose of ER	Comments
Shellfish	15	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	
Shrimp	87	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	
Other	437	PSMFC	OR/CA Required, WA Voluntary	WA/OR 24 hours, CA 3 days	Catch accounting	
Total Unique Users	743	PSMFC	N/A	N/A	N/A	

**Table 14.4. Summary of Participation in Electronic Data Collection for Observer Programs**

Fishery	# of ER Vessels/ER observers	# Vessels/ Plants in Fishery	Required/ Volunteer	Reporting Frequency (day, week, month)	Purpose of ER	Comments
Groundfish	75 Observers	213	Required	Catch data is reported within 3 days after each fishing trip	Catch data collection and reporting	

**Table 14.5. Summary of Participation in Electronic Vessel Monitoring System Programs**

Fishery / Survey Name	# of VMS Vessels	# Vessels/ Plants in Fishery	Data Submitted to / Managed by	Required/ Volunteer	Reporting Frequency (Haul, trip, week, month)	Purpose of VMS	Comments
Groundfish	1,323	Same	OLE	Required	60 min for midwater trawl and EM, 15 min for all other	Enforcement of area measures	
HMS Drift Gillnet	12	Same	OLE	Required	60 min	Enforcement of area measures	

Fishery / Survey Name	# of VMS Vessels	# Vessels/ Plants in Fishery	Data Submitted to / Managed by	Required/ Volunteer	Reporting Frequency (Haul, trip, week, month)	Purpose of VMS	Comments
HMS >24 meters	38	Same	OLE	Required	60 min	Enforcement of prohibited or restricted fishing areas in the EPO	

**Table 14.6. Cost Template for Groundfish Fishery**

2021 EM EFP	Cost	Funding Source	Comments
<b>Sampling Costs</b>			
Equipment, installation, maintenance	\$481,500	Industry	
Video review, reporting, storage	\$435,000	NOAA Fisheries	
Cost recovery fees	N/A		
<b>Administrative Costs</b>			
Program management	\$150,000	NOAA Fisheries	
Databases	\$52,345	NOAA Fisheries	
Cost recovery fees	N/A		
<b>Total Costs</b>			
Total Program Costs	\$1,118,845	Industry, NOAA Fisheries	

2021 EM EFP	Cost	Funding Source	Comments
<b>Sampling Costs</b>			
Equipment, installation, maintenance	\$334,808	Industry	
Video review, reporting, storage	\$253,307	Industry	

2021 EM EFP	Cost	Funding Source	Comments
Cost recovery fees	\$210,286	Industry	
<b>Administrative Costs</b>			
Program management	\$300,000	NOAA Fisheries	
Databases	\$280,345	NOAA Fisheries	
Cost recovery fees	-\$210,286	Industry	
<b>Total Costs</b>			
Total Program Costs	\$1,168,460	Industry, NOAA Fisheries	