Fisheries Information System/Electronic Technologies/Catch Share Program Request for Proposals

FY 2021 Proposal Guidance

Pre-proposal Deadline: April 15, 2020

Proposal Deadline: June 12, 2020

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List of Acronyms

CSP	Catch Share Program
EM	Electronic Monitoring
ET	Electronic Technologies
ER	Electronic Reporting
FIN	Fisheries Information Network
FIS	Fisheries Information System program
InPort	National Marine Fisheries Service's Metadata Warehouse
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOAA Fisheries	a.k.a., National Marine Fisheries Service
NOP	National Observer Program
NOPAT	National Observer Program Advisory Team
OMI	NOAA Fisheries' Operations, Management and Information Division
PI	Primary Investigator
PIMS	Program Information Management System
PMT	Program Management Team
QM	Quality Management
QM & CI	Quality Management and Continuous Improvement
RFP	Request for Proposals

Suggested Resources

How to submit an FIS Proposal

Pre-Proposal Template

Proposal Template

FIS Past and Ongoing Projects Database

FIS Electronic Reporting Inventory

FIS Center of Expertise Electronic Reporting Presentation Series

InPort Metadata Warehouse

NOAA Fisheries ST1 Commercial Landings Query Tool

Introduction

Purpose of this request for proposal (RFP): The Fisheries Information System (FIS) program is a cooperative effort with the National Oceanic and Atmospheric Administration National Marine Fisheries Service's (NOAA Fisheries) regional offices and science centers, as well as regional Fisheries Commissions, Fisheries Information Networks, and states to reduce costs while improving quality, timeliness, and accessibility across all stages of the fishery dependent data lifecycle.

Areas of Interest: The FIS program manages an annual competitive RFP to support the above stakeholders to advance fishery-dependent data within the following areas of interest:

- Quality Management and Continuous Improvement (QM & CI)
- Data Improvements, Modernization, and Integration
- Electronic Reporting (ER)
- Electronic Monitoring (EM)
- Fishery Information Network (FIN) Improvement

Who we are: The FIS program and Electronic Technologies (ET, a part of the National Observer Program or NOP) reside in the NOAA Fisheries Office of Science and Technology, and the National Catch Share Program (CSP) resides in the NOAA Fisheries Office of Sustainable Fisheries. Part of NOP's mission is to support information collection and program implementation. Within NOP, ET supports the use of electronic technologies for fishery dependent data collection. The CSP supports pre-implementation and implementation of catch share programs across the country, complementing the data collection focus of FIS and ET. All three programs leverage State-Federal partnerships and resource investments to provide information needed to help understand the effects of fishing on marine resources and improve the quality of resource management decisions.

Who is eligible: Potential participant(s) come from NOAA Fisheries Regional Offices, Science Centers, Headquarters Offices, FIN partners, and State partners. FIS, ET, and the CSP will allocate resources for high quality proposals based on FIS, ET, and CSP priorities. Funding to State partners will be provided through the Interstate Commissions (check with your local Interstate Commission before submitting a proposal to see if they require prior approval).

Allocation of funding: In the last several years, almost all of the available EM and ER funds have contributed to the RFP, however, starting in Fiscal Year (FY21), it may be that some portion of these funds are provided directly to implemented programs and not for the RFP. For the upcoming Fiscal Year (FY21) Budget, FIS anticipates more than $5,500,000 will be available through this RFP. It is anticipated that the funds will be distributed in roughly the following manner:

- ER and EM combined: up to $4,500,000 (may include funds directed towards continuing projects)
- Data improvement, modernization, and integration: $500,000
- QM & CI $350,000
- FIN Improvement: $300,000

Amounts are subject to change and funding decisions are contingent on the final enacted budget.

Proposal Submission Overview

All pre-proposals and full proposals must be submitted through the NOAA Fisheries Program Information Management System (PIMS). PIMS is NOAA Fisheries' online project tracking and data entry system, in which all project pre-proposals, full proposals, quarterly reporting, and final reporting will be entered. After a proposal is selected for funding, all associated data are automatically publically viewable on the FIS website's Projects Page. If you do not have a NOAA.gov e-mail address and have not previously accessed PIMS please contact Lisa Peterson (lisa.peterson@noaa.gov) for PIMS access. Click here for detailed instructions on registering with PIMS and submitting pre- and full proposals. Late submissions will NOT be considered.

Pre-Proposals

The pre-proposal process is intended to provide an indication to potential applicants of the merit and relevancy of the proposed project to FIS, ET, or CSP before preparing a full proposal. The intent is to reduce the burden of preparing and reviewing full proposals that do not have a high probability of being funded as well as ensuring the projects align with regional priorities.

This process is meant to achieve the following:

- Ensure proposals align with the mission of FIS, ET, or CSP as well as the priorities of the chosen focus area
- Ensure that proposed projects are focused on pre-implementation or implementation, and building upon past work
- Promote collaboration among complementary or redundant proposals
- Ensure proposals align with regional priorities

Each pre-proposal will provide:

- The title of the project
- Associated organization/Financial Management Center (FMC) or FIN
- A brief summary of the project and a goal statement
- Description of how the work supports the FIS, ET, and/or CSP visions
- Clear statement of project objectives and general methodology to be used
- Preliminary itemized budget estimates (e.g. consultants/contracts, hardware/software, project-specific travel)
- Supporting evidence that shows project is a priority for the region
    - If focus is recreational fisheries, proposal should align with the appropriate MRIP Regional Implementation Plan
    - If focus is electronic technologies, proposal should align with the appropriate Electronic Technology Implementation Plan
    - Other office, FMC, or agency planning/guidance documents

Pre-proposals must be submitted via PIMS by 4/15/2020. You will receive acknowledgement of your pre-proposal submission via email. If you do not receive such an acknowledgement, please contact lisa.peterson@noaa.gov to assure successful receipt. Within a week, regional leadership will be notified to use the PIMS to approve the pre-proposal.

Proposal and Project Cycle

The proposal review and award process will follow this general schedule:

General Schedule for FIS Proposal and Project Cycle	
March 6, 2020	FIS/ET/CSP announce RFP and its supported areas of interest.
April 15, 2020	Deadline for pre-proposal submissions.
May 11, 2020	Feedback provided to Principal Investigators (PI) on pre-proposals submitted.
June 12, 2020	Deadline for full-proposal submissions.
June 19, 2020	Deadline for prioritization of proposals by FMC/regional leadership
September, 2020	Announcement of funded proposals. **Selected proposals and all associated quarterly and final reports will be publicly available on the FIS web site**
Upon receipt of appropriation (estimated Spring, 2021)	Funds will be made available to awarded projects subject to availability of funds and OMI processes. Note: Funds cannot be distributed until the funding programs receive their budget allocations, transfers to FIN programs and State partners are made. This can take several additional months due to the Federal grants process.
Quarterly	Quarterly reports for funded projects are due. **Quarterly reports will be made publicly available on the FIS web site.**
One year after initiation of the work	Final reports for funded projects are due. **Final reports will be made publicly available on the FIS web site.**

PIs should read the Evaluation Criteria section carefully. Some of the more significant requirements of this RFP are:

- Proposals must be submitted through PIMS. Proposals that are incomplete will not be considered.
- Quarterly and Final Reports must be submitted through PIMS.
- Federal labor costs, overhead, or other administrative costs for NOAA or any collaborating federal agency cannot be included in the budget.
- Collaboration among regions and FINs is strongly encouraged and will be considered during the evaluation process and when making a final determination on the amount of an award.
- **Any proposal seeking funding greater than what is available within its respective Focus Area will not be considered**
    - **In the case of Quality Management, "large" projects may not seek funding greater than $200,000**
- Submissions **must be approved by the Regional Administrator/Deputy, Science Center Director/Deputy, Headquarters Office Director/Deputy, or equivalent in the PIMS system prior to consideration at the pre-proposal level**. **State partner pre-proposals must be approved by the relevant Commission leadership. At the proposal stage, leadership will also be contacted to specify projects that are of high priority to the region.**
- Proposals should address how metadata will be provided for datasets collected or generated as part of the project. Metadata must be submitted to InPort, the NOAA Fisheries metadata catalog, as required.
- Proposals should address how non-confidential datasets collected as part of the project will be made available to the public.

FIS, ET, and CSP will strictly enforce the requirements and deadlines in this proposal guidance. Please read this *entire document* and contact Alan Lowther (alan.lowther@noaa.gov) or Lisa Peterson (lisa.peterson@noaa.gov) if you have any questions.

Proposal Format and Content

Entering Your Proposal

All pre-proposals and full proposals must be submitted through the NOAA Fisheries PIMS. All fields must be completely filled out in accordance with the instructions provided. Proposals must also clearly identify the relevant Focus Area. Links to other documents or websites may be included in the proposal for background information; however all information relevant to the evaluation criteria and themes must be provided in the body of the proposal.

See templates for the pre-proposal and proposal, but final submissions must go through PIMS. Click here for detailed illustrated instructions on PIMS submission.

Project Funding and Timing

Proposed projects should provide detailed information regarding the funding request as well as the plan for completing any necessary procurement actions. All funds must be obligated within the current fiscal year. All proposals must include funding implementation plans that outline how the funds are to be transferred to the proposal sponsors and participants, including main financial points of contact. All milestones must be reached and all deliverables must be achieved within one calendar year of the award unless otherwise specified in the project proposal. Funding to State partners will be provided through the Interstate Commissions**. Note that funds cannot be distributed until the funding programs receive their budget allocations. Transfers to FIN programs and State partners through the Interstate Commissions can take several additional months due to the Federal grants process.** In the event of such delays, applicants have one year to complete the proposed work unless the applicant timeline provides for an alternative schedule. In the event that a supported project must alter its proposed methods or outcomes, the principal investigator will submit an adjusted work plan to FIS (lisa.peterson@noaa.gov or alan.lowther@noaa.gov), with an adjusted scheduled list of deliverables. State partners should factor Commission overhead rates into their project budgets.

Multi-Year Projects

This RFP does fund some multi-year projects, and will consider funding continuing development costs. However, each annual phase of the project will require its own separate RFP application and will depend on past project performance and the availability of funds. The full plan with projected costs and objectives for subsequent years should be detailed in the proposal. FIS will not fund operations and maintenance costs indefinitely, and projects must provide a plan for covering ongoing costs once development is complete. Applicants are encouraged to submit proposals that identify an entity that is committed to funding recurring costs, proposals that do so will receive a more favorable rating in that evaluation criteria. Please contact Lisa Peterson or Alan Lowther (lisa.peterson@noaa.gov or alan.lowther@noaa.gov) if you have any questions.

Evaluation Criteria

Review teams representing FIS, ET, and CSP for each proposal focus area will review and evaluate all full proposals against the Evaluation Criteria (listed below). Final scoring of each proposal will be by consensus scoring of the teams after individual reviews are completed. The summary results of the evaluation by each team will be presented to FIS, ET, and CSP for discussion and final approval. The evaluation criteria are as follows:

Matching with FIS, ET, CSP, and/or Broader Agency Goals/Objectives : FIS is a state-regional-federal collaboration that leads and supports programs and initiatives to improve the collection, sharing, and use of fisheries-dependent data across their lifecycle. FIS works to improve access to comprehensive, high-quality, timely fisheries information by investing in data gaps and data quality; efficient technology and data integration; and effective coordination and communication in the design, collection, and uses of data. The ET program supports the use of electronic technologies for fisheries dependent data collection, including electronic monitoring and electronic reporting. EM or ER projects should address the needs outlined in NMFS/Council Regional Electronic Technology Implementation Plans. The CSP supports pre-implementation work and implementation of catch share programs across the country and complements the data collection focus of FIS and ET. Some questions that reviewers may consider when scoring this criterion - Does the project promote the advancement of the priorities of FIS or ET (and identify how)? Does the project fit in the selected focus area as provided in the RFP guidance document? Does the project address the resolution of a known issue regarding the accuracy, completeness, and timeliness of fisheries-dependent data? Does the project improve the visibility of FIS/ET/CSP? Does the project have senior leadership support? Does the proposal address documented regional or national priorities (e.g. NMFS/Council Regional Electronic Technology Implementation Plans)?

Quality of Proposal: Applicants should demonstrate they have thoughtfully and thoroughly completed the proposal, detailing what issue their proposal is addressing, why they are addressing it, and how they will address it in a realistic and easy-to-follow way. Some questions that reviewers may consider when scoring this criterion - Does the proposal describe the goals and objectives in a realistic manner? Does the proposal provide a realistic and complete budget? Does the proposal include detailed milestones and a timeline for achieving success? Is the proposal completed in the correct format?

Scope and Broader Applicability: The FIS program, ET program, and CSP are interested in supporting projects that have wide applicability and impact, both directly and indirectly, and value projects that have a plan for coordination among partners and dissemination of results. Some questions that reviewers may consider when scoring this criterion - Does the project have a wide impact? Is the project cross-regional or transportable? Is there a plan for transferring knowledge and lessons learned? Is this project coordinated with similar projects completed or underway? Is there buy-in among partners who are expected to benefit from the project?

Use of Existing or Matching Resources: Projects that take advantage of existing resources to multiply the outcome of their efforts are desirable. This includes existing commitments from their program or partners to match resources or the use of existing resources (e.g. ST1 Commercial Landings Web Query). Some questions that reviewers may consider when scoring this criterion - Does the project take advantage of existing FIS/ET/CSP activities or existing resources? Will the submitting office provide matching funds, personnel resources, or equipment? Will other programs, regions, FINs, or states provide matching funds, personnel resources, or equipment?

Timeliness: The project should have a clear and realistic timeline and schedule of deliverables listed in the proposal. Some questions that reviewers may consider when scoring this criterion - Are the timeline and milestones appropriate and realistic? Is there a clear description of the project end-point?

Cost/Benefit: The proposed budget should be evaluated considering the potential benefits and impact. There should also be a clear transition plan that describes how the project will live on following the completion of the year of funding. Some questions that reviewers may consider when scoring this criterion - Is the proposed cost of the work reasonable considering the expected benefits? Does the project have the potential to reduce the current cost of an existing process? Is there information about how the project could be supported in the long-term?

Compliance with NOAA Data Policies: The project should include thorough metadata documentation and a data documentation plan that complies with any relevant NOAA data policies. Some questions that reviewers may consider when scoring this criterion - Is submission of metadata to InPort part of the plan? How accessible will the data be to the public (if appropriate) and within NOAA?

Level of Risk: The project should have a realistic description of the risks involved with the different aspects of the project. Some questions that reviewers may consider when scoring this criterion - Do the risk descriptions and risk impacts seem realistic? Are the risk mitigation approaches outlined in the proposal reasonable? Are there other risks that you would have liked to have seen addressed in the proposal? If there is reliance on outside participation? Will that present a barrier or is it appropriate and realistic? Do the potential gains from the project outweigh the level of risk?

Project Reporting

Post-Selection

The PIs of selected proposals may be asked to provide more information or respond to suggested improvements. Additionally, revised project timelines may be required upon the distribution of funds.

Quarterly Status Reports

The PI for each project is expected to be the primary point of contact for communications and reporting and are expected to provide all requested status report information for their respective projects. PIs are required to submit status reports through PIMS on a quarterly basis. This will include an update on tasks and milestones identified in the proposal. In addition, FIS or ET may occasionally request additional information in order to inform NOAA Fisheries Leadership, the FIS PMT, the Electronic Technologies Working Group, and the public. **Quarterly reports will be made publicly available on the FIS website**.

Written Final Report

Each PI must provide a written final report detailing the accomplishments for the completed project. This will be due one year after the funding is awarded. External links to products, references, and related information may be included in the report. Electronic copies of all presentation materials, documentation, and the final report must be submitted through PIMS. The FIS and ET Program Managers routinely review all aspects of funded proposals and may request additional information during the performance of a project. Occasionally requests are made for anecdotal descriptions of the impact of successful projects in order to keep NOAA management and the public better informed. PIs who fail to submit a final written report will not be eligible for the next RFP cycle. Final reports will also include six questions that will be used to track the impact of the FIS RFP, these will not be used to evaluate the specific project but to keep track of the RFP as a whole.

Upon completion of projects, some PIs may be asked to present their projects and outcomes during the next annual PMT or NOPAT meetings. This is intended to be a forum for sharing information and lessons learned among FIS and ET partners. When applicable, well-documented source code must be provided to FIS or ET following project completion. Compliance with these requirements is necessary in order to be eligible for future FIS/ET funding. **Final reports will be made publicly available on the FIS website**.

Data Documentation

Proposals must comply with the NOAA Fisheries Data and Information Management Policy. The NOAA Fisheries Data Documentation Directive requires that metadata for all data collected or produced be entered and published in the NOAA Fisheries Data Catalog and Metadata Repository, InPort. **Failure to comply with this policy may make the PIs ineligible for the next RFP cycle**.

For details on setting up an account as an InPort "Author" and populating project metadata, please contact your office's InPort Librarian. If your office does not have an InPort Librarian, please contact the InPort Help Desk. The InPort help desk is available to all prospective InPort Authors from within and outside of NOAA.

Focus Areas

- **For examples of projects from each Focus Area, please see FIS' public database of past and ongoing projects supported by this RFP**

Fishery Information Network (FIN) Development

FIS will make funding available to support projects not covered elsewhere in this RFP with regional and national benefit related to the FIN programs. Proposals should focus on work to strengthen the FIN programs however possible, but with particular focus on tasks related to the integration of data sets, multi-regional or multi-partner coordination, and on implementing the recommendations of the 2013 FIN Review. This includes national collaboration and coordination among FIN programs, the development of quality assurance plans, data information management and dissemination, strategic planning, outreach, and developing a review and improvement process.

Quality Management and Continuous Improvement

NOAA Fisheries strives to find creative solutions that promote high quality, accurate, defensible data that supports timely and cost-effective management and policy decisions. Though QM & CI practices include data quality, the reach is much broader, and projects focused solely on data quality should read the information about the Data Improvements, Modernization, and Integration focus area below. QM & CI includes leadership engagement, strategic planning, the use of process improvement tools and listening to the customer. The overall goal of creating a QM & CI environment is the successful and efficient delivery of products and services across an enterprise.

Additional information on quality management can be found in the QM & CI area of the FIS web site. FIS has provided a list of QM & CI principles, strategies, and tools on its website (see link above); however this list is not exhaustive and applicants may explore other planning, decision-making, or evaluative tools that are linked to QM & CI practices or themes. The intent of this Focus Area is to promote the use of QM & CI tools such as Value Stream Mapping, Data Flow Diagramming, Hoshin Planning, Measures & Metrics, Business Rule Documentation, and Project Tracking Applications.

Funding Available: We anticipate $350,000 being available to fund QM & CI projects. Applications will be evaluated as either "large" or "small" category projects. Projects in the two categories will be considered and scored separately from each other:

- Small Projects - Proposals requesting up to $30,000 will be evaluated in the small project category. Up to $150,000 is planned to be made available for the small project category.
- Large Projects - Proposals requesting over $30,000 will be evaluated in the large project category. Approximately $200,000 total is planned to be made available for the large project category. Budgets for large projects should not exceed $200,000.

Special Instructions for this Focus Area (QM & CI):

- Applicants should indicate in the proposal application how and why QM & CI is a need in their organization, or how the proposed activity might expand QM & CI in their organization.
- If the application is for the use of a specific QM & CI tool, please describe why this particular tool was chosen for the application.
- If you are asking for QM & CI money to implement a QM & CI solution, please describe what previous QM & CI tool and/or QM & CI work identified that need.

QM & CI Themes for proposals:

- **Training and/or Application of QM & CI principles, strategies, or tools towards identification and solution development -** Proposals may be submitted to fund training workshops focused on the application of specific QM & CI principles, strategies, or tools. Proposals can also be submitted that request funding for training on general QM & CI concepts and principles. These types of general trainings bring awareness to QM & CI

concepts, which can help the organization determine the best QM & QI tool for the issue at hand. Proposals may also fund workshops that constitute the preliminary work needed to implement solutions that resolve known issues with organizational processes or programs if applicants demonstrate sufficient familiarity with QM & CI processes to run workshops outside of a training environment.

- **Implementation of QM & CI solutions -** These types of projects are the result of a previous QM & CI exercise (see above bullet) and may include system enhancement, maintenance, or analysis projects. If applying under this theme, the proposal must detail previous QM & CI exercises and/or work used to analyze the situation and how this project was derived from QM & CI exercise outcomes. It is not the intent of this theme to support ongoing operations; however, proposals could request funds to enhance an existing system or process that is then maintained through regular operational funding.

Data Improvements, Modernization, and Integration

NOAA Fisheries recognizes the need to improve and update our fisheries data collection systems to accommodate changes to data streams as well as the incorporation of new technologies. This includes investing in improvement, modernization, and integration in order to streamline and increase the efficiency of our fishery information systems. This RFP has funding available for projects that address these topics.

- **Data improvements -** Constantly striving for the best available science means constantly trying to improve our fisheries data. We need to be able to identify and respond to changes effectively, and we do that by collecting high quality data. Proposals that focus on redesigning data systems to enhance their effectiveness would apply under this focus area. This could include improving the accuracy, precision, timeliness, or accessibility of data.
- **Data modernization -** Fisheries data collection systems have evolved through time reflecting the needs of stakeholders. However, many of these systems to not take advantage of the benefits of the technological advancements that have happened in the past decade. These types of projects would focus on bringing these data systems into the 21st century, or designing new data systems using modern techniques and technologies. This could cover proposals that address the modernization of how data are collected, used, stored, or organized.
- **Data integration -** Interoperability between data stream silos has the potential to make existing data systems both more efficient and effective. This can be a daunting task if the data are collected and documented differently across regions and gears. These projects would be focused on bringing together and/or making transferable existing data streams, incorporating new data streams into existing ones, or combining different systems one streamlined process.

Electronic Reporting Pre-implementation & Implementation

Up to $4.5 million, depending on the allocation of FY20 funding, total is planned to be made available for projects in the Electronic Reporting **and** Electronic Monitoring areas of interest **combined**. The distribution between the two areas of interest will be determined based on proposals received.

Electronic reporting (ER) is typically considered the collection of harvest and biological data, i.e. fishery dependent data, through electronic means (i.e., electronic fish tickets, electronic logbooks). Projects should emphasize electronic means for reporting and build on existing work, either within regions or from other areas. Projects should be usable by the agency and some or all features of the project may be transferable across regions and fisheries. Projects may include identifying data needs and assessing gaps and should explain how ER will be integrated, as appropriate, with other data collections and how this will lead to implementation. Other proposals that address best practices for ER are eligible for this RFP. Proposals for implementing ER in recreational or for-hire fisheries should address how the projects align with national and regional priorities established for the Marine Recreational Information Program (MRIP). Proposals must describe how the projects are consistent with Regional Electronic Technologies Implementation plans. Consideration will be given to how proposed projects support the relevant Implementation Plans. Pre-implementation projects must include a description of the process to implementation, if the project outcome is successful. **Proposals that expedite the transition to full ER implementation are particularly encouraged.** ER project proposals must provide a report describing methodology and outcomes, and should address one or more of the following:

- **ER feasibility studies and phased deployments of ER systems.** Feasibility studies and phased deployments must clearly identify steps to full implementation if successful. Proposals in this area should address the *Electronic Reporting Critical Success Factor Trigger Questions* found in Appendix A. Proposals could include:
    - Assessing the feasibility of implementing ER in a place where it is not used. This should include:
        - a quantitative and qualitative (if applicable) assessment of costs, impacts, timeliness and/or efficiency of moving from paper reporting (or none) to electronic reporting.
        - An analysis of various cost allocation approaches. Cost allocation means that various program costs would be the responsibility of either federal or non-federal program partners.
    - Testing potential ER systems, including identifying technology options, such as installing an ER system on a sample group of vessels or at processing plants. Projects should not duplicate or re-create existing products, though adapting or improving existing products is acceptable.
    - Investigating transferability/portability of ER systems such as across vessel types, fisheries, sectors, regions, etc.

- Implementation of an ER system as an alternative to an existing data collection program. For example, migrating from a paper-based system to an electronic system.
- Assessing integration of multiple data streams (e.g. observer data, logbooks, dealer reports, EM, state and federal data) for resource management, including data quality and data validation.

- **Migrating ER systems from pre-implementation/limited deployments into full operations:** This area supports implementation projects based on previous successful ER pilot projects.
  - Based on the results of preliminary testing, move to fully implement one or more ER system(s).
  - Demonstrate improvements to fishery management processes including meeting regulatory requirements or supporting existing agency goals (including cost reduction, use of standards, data accuracy, data timelines, operational efficiency, etc.).
  - Address issues identified in a pilot that will open a clear pathway to production-level implementation.
  - Develop infrastructure and system architecture design and integration that would allow ER programs to operate.

  - Develop and implement infrastructure and system design to integrate new ER data streams with other federal, state, territorial, tribal, or international fisheries management data programs for collaborative fisheries data management.

- **ER system expansion and enhancement.** This area refers to expanding and enhancing existing ER systems and may include:
  - Providing fishing industry with appropriate hardware/software/equipment while avoiding duplication or re-creation of existing products, although adapting or improving existing products is acceptable.
  - Collaborating with private software providers to improve ER capabilities that meet regional specifications. Open-source software is encouraged.
  - Developing clear product requirements and acceptance criteria that promote third-party product development.
  - Providing ER solution(s) to unique challenges, e.g., implementing ER on small boats.
  - Improve, rebuild, or replace legacy production ER system components that use outdated technologies, regulations, etc.
  - Develop and implement infrastructure and system design to integrate existing ER data streams with other federal, state, territorial, tribal, or international fisheries management data programs for collaborative fisheries data management.

- **ER outreach plans, communication efforts, and software training/education.** This area focuses on making ER systems more accessible and desirable to users through education, utility, and ease of use. Examples include:
    - Improving awareness and promoting adoption of ER systems.
    - Bringing stakeholders together early in the process of developing new ER systems and identifying management and regulatory needs.
    - Sharing lessons learned with user groups and developers.
    - Demonstrating capabilities of ER to potential user groups through training sessions, seminars, etc.
    - Developing regionally/culturally tailored multimedia tools for outreach such as instructional videos, web pages, smartphone apps, etc.
    - Providing hands-on training to ER users including culturally appropriate methods for effective learning.

Electronic Monitoring Pre-implementation and Implementation

As noted above, up to $4.5 million, depending on the allocation of FY20 funding, is planned to be made available for projects in the Electronic Reporting **and** Electronic Monitoring areas of interest **combined**. The distribution between the two areas of interest will be determined based on proposals received.

Electronic Monitoring (EM) typically means the use of cameras, hardware, and software to collect and process fishery dependent data (i.e., harvesting or processing operations). Projects should emphasize electronic means for monitoring and may build on existing work or seek to develop new or upgraded technologies. Projects may include identifying needs and assessing gaps and should explain how EM will be integrated with other data collections. **Proposals must describe how the projects are consistent with Regional Electronic Technologies Implementation plans**. Consideration will be given to how proposed projects support the relevant Implementation Plans.

Pre-implementation projects must include a description of the implementation process, if the project outcome is successful. **Proposals that expedite the transition to full EM implementation are particularly encouraged.** Projects should not duplicate or re-create existing products, though adapting or improving existing products is acceptable. EM project proposals must describe methodologies and outcomes, and should address one or more of the following:

- **Image recognition technologies -** to develop and test image recognition technologies for use in compliance and catch accounting including bycatch monitoring, species identification, and length/weight calculations.

- **Conversion of imagery into database-compatible information** - to develop and test a system for converting video into data, using open source software.

- **Information storage and transfer -** to develop and test transfer and storage technologies.

- **Integrate EM and other fisheries data systems** - to develop methodologies for integrating regional EM with other federal, state, territorial, tribal, and international fisheries management data systems, including ER systems.

- **EM feasibility studies and phased deployments.** This area represents feasibility studies and phased deployments of EM systems. This could include:
  - Assessing the feasibility of implementing EM in a place where it is not used.
  - Testing potential EM systems, including identifying technology options, such as installing an EM system on a sample group of vessels, landing locations, or at processing plants.
  - Investigating transferability/portability of EM systems such as across vessel types, fisheries, sectors, regions, etc.

- Assessing integration of observer data and EM for resource management, including data quality and data validation
- Feasibility studies and phased deployments must clearly identify steps to full implementation, if successful.

- **Migrating EM systems from pre-implementation/limited deployments into full operations:** This area supports implementation projects based on previous successful EM pilot projects.
  - Based on the results of preliminary testing, move past the planning process to fully implement one or more EM system(s).
  - Demonstrate improvements to fishery management processes including meeting regulatory requirements or supporting existing agency goals (including cost reduction, use of standards, data accuracy, data timelines, operational efficiency, etc).
  - Address issues identified in a pilot that will advance effort closer to implementation.
  - Develop infrastructure and system architecture design and integration that would allow EM programs to operate.

- **EM outreach plans, communication efforts, and software training/education.** This area focuses on making EM systems more accessible and desirable to users through education, utility, and ease of use. Examples include:
  - Improving awareness and promoting adoption of EM systems.
  - Bringing stakeholders together early in the process of developing new EM systems and identifying management and regulatory needs.
  - Sharing lessons learned with user groups and developers.
  - Demonstrating capabilities of EM to potential user groups through training sessions, seminars, etc.
  - Developing regionally/culturally tailored multimedia tools for outreach such as instructional videos, web pages, smartphone apps, etc.
  - Providing hands-on training to EM users including culturally appropriate methods for effective learning.

Proposals in these areas should consider the *Electronic Monitoring Focus Area* found in Appendix B.

Appendix A: Electronic Reporting Critical Success Factor Trigger Questions

The following trigger questions are intended to get fishery managers to think about and evaluate the readiness of their candidate fishery for electronic reporting. These questions are not intended to assure the success of any program, but can guide the manager through steps and thought processes in the beginning of implementing ER so that major points are not missed.

List of trigger questions

1 Are local record keeping or reporting regulations in place to support, enable, or require ER?

2 Do the drivers exist to foster ER?

3 Does the fishery have the characteristics conducive to ER?

4 Are you designing methods for collaboration with all stakeholders over the program lifecycle?

5 Will the program provide sufficient incentives to industry to report electronically?

6 Do you foster a culture of continuity in funding, staff, and infrastructure?

7 Have you done a proof of concept-feasibility study first to learn what can and can't be done?

8 Can the program be designed to allow data access by stakeholders?

9 Will the program provide a variety of methods to electronically enter and submit data?

10 Will the program provide for immediate validation of data and business rules?

11 Will the database have back end integrity providing for minimum errors in data?

12 Is there an ongoing commitment to continuous training and support and maintenance?

13 Is there – or will you develop – a program to monitor the success of the program?

14 Are you building on other's experience in implementing a similar ER program?

15 Have you reviewed the resources available on the FIS website regarding ER implementation similar to your needs:

- FIS Electronic Reporting Inventory
- FIS Center of Expertise Electronic Reporting Presentation Series
- FIS Past and Ongoing Projects Database

Appendix B: Electronic Monitoring Focus Area

The goal of fisheries monitoring is to provide cost-effective solutions for collecting fishery dependent data which meets the needs of a range of scientific, management, and compliance objectives. Building on others experiences provides a cost effective approach to developing an EM program. The FIS website contains information about current national efforts in implementing EM and contacts and grant applicants are encouraged to review this information before developing a proposal. Based on the identified objectives, the design and implementation of any fishery monitoring program should consider the following:

- Timeliness of data delivery (e.g., in terms of GPS/VMS polling interval; transfer interval of video records or e-logbook records);
- Quality of data (e.g., in terms of accuracy, statistical variation and precision of estimates);
- Resolution of data (e.g., in terms of time/polling interval; geospatial scale; pixels/frame rates for images; Details of spatial, temporal and gear characteristics associated with catch to be collected for use in stock assessments, ecosystem science and socioeconomic purposes);
- Capability for integrating and reconciling data from different sources (e.g., interoperability standards; formats/coding conventions);
- Accessibility of data and statistical results to the various customers (e.g., frequency and timeliness of data availability including access/permissions by submitters, managers, other stakeholders, public, etc.);
- Data needs of customers, such that EM systems are designed to optimize timing and content for the documented needs;
- Industry-shared or borne costs of operation and maintenance (e.g., hardware and software purchase and lease/license agreements; communication charges; training and support contracts (if any)); and
- Flexibility to adapt to changing requirements (e.g., interactions with non-target and protected species, changes in annual total allowable catches, impacts on observer coverage).