

Discussion Paper:
Alaska Region Economic Data Reporting Programs
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¹ Prepared by Brian Garber-Yonts (Alaska Fisheries Science Center (AFSC), Economics and Social Science Research Program (ESSRP)), Stephen Kasperski (AFSC ESSRP), Sally Bibb (NMFS Alaska Region, Sustainable Fisheries Division (AKR)), and Scott Miller (AKR).

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1 Executive Summary

This discussion paper provides information and recommendations about the four Economic Data Reporting (EDR) programs that the North Pacific Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS) have implemented in the federally managed groundfish and crab fisheries off Alaska. The EDRs gather various levels of ownership, revenue, cost, vessel operations, and employment information from vessel owners, vessel operators, processors, permit holders, and leaseholders who participate in several of the catch share programs in the North Pacific fisheries. In general, the purpose of the EDR requirements is to gather information to improve the Council's ability to analyze the economic effects of catch share or rationalization programs, to understand the economic performance of participants in these programs, and to help estimate impacts of future issues, problems, or proposed revisions to the programs covered by the EDRs.

The following four EDRs are addressed in this discussion paper:

- BSAI Crab EDR, implemented in 2005 (*Crab EDR*);
- Trawl Catcher/Processor (CP) EDR implemented in 2007 for Amendment 80, and in 2015 for CPs operating in the GOA groundfish fisheries (*A80 EDR*);
- BS Chinook salmon bycatch management program EDR for participants in the BS pollock fishery, implemented in 2012 (*A91 EDR*); and
- GOA trawl EDRs for trawl catcher vessels operating in the GOA and processors taking deliveries from these vessels, implemented in 2015 (*GOA Trawl EDR*).

The Council discussed the EDRs in several meetings during 2018. Public testimony at the February and April 2018 Council meetings noted that the EDR programs had been in effect for some time and testimony focused on whether the EDR requirements for the GOA trawl catcher vessels and processors had met the Council's purpose and need to collect baseline information to assess the impacts of a potential future GOA catch share program. Also at the April 2018 meeting, the Council reviewed a discussion paper prepared by NMFS that provided information related to NMFS's request that the Council review all of its regulations to identify any that were outdated, unnecessary, ineffective or could be further streamlined (NMFS, 2018) which included a reference to the Council's February 2018 discussion of the EDR requirements as a possible area of regulations for future Council review. Later in the April 2018 meeting, in response to this public comment and further discussion among Council members, the Council requested that NMFS prepare a discussion paper that describes the EDR requirements for all programs, explains how the data are used, and provides estimates of the costs of complying with the EDR requirements. The Council's motion stated that the Council could then use the information in the discussion paper to determine if revisions to EDR requirements are needed and, if so, the priority and process for analysis of proposed revisions. This discussion paper provides the information requested by the Council in April 2018.

Requirements and Guidance for Economic Analyses

A variety of Federal laws and Executive Orders require the preparation of a written analysis of the economic impacts of proposed fishery conservation and management actions developed by the Council. Foremost among these are the Magnuson Stevens Fishery Conservation and Management Act (MSA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order (E.O. 12866), and, more recently, E.O. 13771.

The MSA requires that the Councils prepare fishery management plans for each fishery under its authority that requires conservation and management (section 302(h)(1)), with Section 303 of the MSA specifying the contents of the FMPs. Many of these content requirements are related to economic aspects of the fisheries, including requirements for information about the participants, gear types, operational

modes, harvest levels, revenue, and the cost likely to be incurred in management. The MSA also requires that any FMP or FMP amendment must be consistent with ten national standards (section 301(a)). Each of the national standards has some relation to economic aspects of the fisheries. However, the most direct references to economic impacts are in National Standard 1(NS1) which relates to achieving optimum yield, National Standard 4 (NS4) which mandates the fair and equitable allocation of fishing privileges, National Standard 5 (NS5) which requires consideration of efficiency and prohibits economic allocation as the sole purpose of an action, National Standard 7 (NS7) which requires minimization of costs, and National Standard 8 (NS8) which requires consideration of the importance of fishery resources to fishing communities and specifically references using the best available economic and social data.

Determinations about the consistency of a proposed action with the National Standards relies, in large part, on the economic analysis prepared for a proposed action. In addition to the general requirements of the MSA, section 303(b)(6) contains a specific list of factors that the Council and Secretary of Commerce must take into account when establishing a limited access system for a fishery. Most of these factors are related in some way to economic considerations.

NEPA requires Federal agencies to consider the interactions of natural and human environments, and the impacts on both systems of any changes due to governmental activities or policies. In addition, NOAA's NEPA implementation guidelines require that the environmental impact statement (required under NEPA Sec. 102(2)(C)(i)) include biological, ecological, economic, and social consequences. Social science data and the models they support are needed to conduct the required analyses and to predict the behavioral response of fishermen and others that affect the biological, ecological, economic, and social consequences (AFSC 2019).

The Regulatory Flexibility Act (RFA), requires agencies to consider the impact of their regulatory proposals on small entities, to analyze effective alternatives that minimize small entity impacts, and to make their analyses available for public comment ([SBA, 2010](#)). Small entities are identified based on either an income or employment threshold. The RFA requires analysis of the costs and burden of information collection requirements on industry participants.

E.O. 12866 (58 FR 51735, October 4, 1993) is the primary Presidential Executive Order that requires the preparation of economic analyses of regulations implementing fishery conservation and management actions. Council and NMFS staff comply with E.O. 12866 by preparing a Regulatory Impact Review (RIR) for each conservation or management action that will be implemented through Federal regulations.

NMFS issued guidelines for the preparation of economic analyses to meet the requirements of E.O. 12866 and the RFA, two of the most direct mandates for the preparation of economic analyses. "[Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions](#)" (NMFS, 2007) addresses the procedural and analytical requirements of E.O. 12866 and the RFA. The guidelines state that "[A]lthough a benefit-cost analytical framework is prominent in meeting the intent of E.O. 12866, it also requires broad consideration of the distributive effects and economic burden that may be imposed on individuals, businesses of differing sizes, as well as small communities and governmental entities... Meeting the broad analytical requirements of E.O. 12866 requires consideration of both benefits and costs of regulatory alternatives from a National perspective, as well as from that of the private individual or firm." In addition, the RIR must provide the information necessary to evaluate the change in net benefits to the Nation from each of the alternatives, and not just for the preferred alternative or proposed action.

NMFS's guidelines do not prescribe particular economic analysis methods, a required level of analysis, or specific data collection elements, but state that the analysis "should include a good qualitative discussion of the economic effects of the selected alternatives. "Quantification of these effects is desirable, but the analyst needs to weigh such quantification against the significance of the issue and available studies and resources." The appropriate analysis depends "on circumstances to be analyzed, available data, the accumulated knowledge of the fishery and other potentially affected entities, and on the nature of the

regulation option.” However, the guidelines also state that “a quantitative analysis should be substituted for a qualitative analysis whenever feasible (i.e., when adequate data, resources, and defensible analytical models are available).”

More recently, E.O. 13771 was issued on January 30, 2017. This E.O. is intended to manage the costs of government regulation on private industry and is the source for the policy that two deregulatory actions are needed for every regulatory action that is significant under E.O. 12866 and that imposes costs on industry. To comply with this E.O., NMFS prepares a worksheet for each proposed rule that identifies whether the proposed action is reducing costs or imposing costs and, if known, the amount of the cost or cost savings. NMFS relies on the RIR to provide the necessary information about the costs of a proposed rule.

Data collection design and data quality guidance

Many of the processes involved in developing and implementing a larger and more complex data system, such as eLandings, are required for operation of the EDR program. The North Pacific fishery information system in regards to the human environment can be broadly divided between *administrative record systems* designed for primary uses in in-season fishery management and *statistical surveys* that are defined by the Office of Management and Budget (OMB) as those employing statistical methods, i.e., “a. *collecting data using any survey methods; b. doing any kind of estimation, imputation, or weighting; or c. pretesting or field testing for a survey, including cognitive interviews or focus groups from a total of 10 or more people.*” Examples of administrative record systems include fishery permit registries, ADF&G fish tickets and Commercial Operators Annual Report, AKR’s catch accounting system, and other data collections associated with record keeping and reporting requirements under federal or state fishery regulations, while statistical surveys include surveys of recreational anglers to assess their catch, effort, and value derived from fishing, social surveys of participant demographics, distribution, and preferences, and the EDR forms.

The distinction between the EDR program and administrative data systems is important for several reasons. Administrative data are used routinely by agency staff to execute specific regulatory procedures, in many cases producing direct effects on specific regulated entities. Because these elements in the EDR Program closely resemble features of NMFS and ADFG administrative reporting forms, however, EDR submitters may confuse the distinct purpose and permissible uses of EDR data collections from those associated with administrative reporting requirements, and convey expectations for data quality requirements appropriate to the latter that may be excessive for the intended uses of EDR data. For example, while a vessel may not be able to precisely calculate the vessel maintenance cost associated with a specific fishery, monitoring the changes in overall fleet costs over time can provide insight into how a catch share program impacts the costs of participants.

Consistent with principles stated in PRA review guidelines, NOAA Information Quality (IQ) guidelines acknowledge that “accuracy” is not an absolute metric, but must be assessed on the basis of whether information is “within an acceptable degree of imprecision or error appropriate to the particular kind of information at issue and otherwise meets commonly accepted scientific, financial, and statistical standards, as applicable;... original and supporting data that are within an acceptable degree of imprecision, or an analytic result that is within an acceptable degree of imprecision or error, are by definition within the agency standard and are therefore considered correct.”

National Standard 2 (NS2) develops additional data quality guidance beyond NOAA IQ Guidelines that is particularly applicable to evaluation of EDR data and information considered in developing and evaluating EDR data collections. The criteria established in NS2 are intended to be used when evaluating best scientific information are relevance, inclusiveness, objectivity, transparency and openness, timeliness, verification and validation, and peer review, as appropriate.

Overview of current EDR program framework

Each of the EDRs was developed through the Council's FMP and regulatory development and review process, beginning with the specification of purpose and needs for the data collection and the development, analysis, and selection of a preferred alternative. In reaching final action on preferred alternatives for each new or revised EDR, the Council has specified submission requirements, administrative procedures, and enforcement mechanisms for the data collections, and in all cases included detailed descriptions of the information content of EDR forms in their regulatory recommendations to NMFS.

In EDR development and ongoing oversight, the Council has relied on committees and/or workgroups of varying industry, agency, and/or scientific composition and purpose, and has varied in its responsiveness to AP and SSC review recommendations. Notwithstanding differences in EDR form content and specific elements of implementing rules (e.g., target populations) between the four EDRs, the general structure of the EDR program is largely consistent with that of the original Crab EDR as developed by the Council and implemented by NMFS. Each of the four EDRs employs mandatory annual censuses of the target populations of designated reporting entities participating in the associated fishery management programs, and all include provisions for third-party data verification audits in the implementing rules.

Within the recommended framework developed by the Council, the EDR program is managed jointly by AKRO and AFSC (primarily by the Economic and Social Sciences Research Program (ESSRP)), with Pacific States Marine Fisheries Commission (PSMFC) acting as NMFS' Data Collection Agent (DCA). PSMFC provides primary administrative support for collection and database management for all four EDR collections. AFSC and PSMFC collaborate on development and maintenance of workplans for implementation of new or revised EDRs, including development of Scope of Work documents and RFP procedures for soliciting and selecting bids for required IT application development and Data Verification Audit work subcontracted by PSMFC, AFSC monitors implementation and oversees quality control of PSMFCs administrative process and communication with submitters.

Current Crab rationalization program EDR

The Crab EDR is comprised of three EDR forms developed for the respective sectors: the Crab CV EDR, Crab Processor EDR, and the Crab C/P EDR. The CV and processor forms collect distinct sets of data elements, with the CP form comprised of a combination of all data elements collected in the catcher vessel form and applicable elements from the processor form. Crab CV and CP forms report ex-vessel sales and quota lease costs by fishery and quota type; fuel gallons, provisions costs, bait costs, and total labor payments to crew and captains by fishery, annual total fuel cost and gallons and annual total direct labor payments to crew (inclusive of crab settlements); commercial crew license or CFEC permit number for all crab crew members; and indicators of benefits provisions to captain and crew and tendering use of the vessel. Crab processor and C/P forms collect valuation metrics for plant/vessel; crab product sales by species, product and process code, and box size, custom processing services provided and fee revenue, raw crab purchases and processing quota lease costs by fishery and quota type; custom processing services purchased and cost, processing labor gross wages and paid hours by fishery; processing employee count by location of residence; and non-processing employment and total annual gross wages and salaries.

Amendment 80 economic data EDR

The A80 EDR form has been submitted annually by A80 QS holders since 2008, collecting quantitative data for a comprehensive set variables. The form collects vessel characteristics and registry details, survey value, fuel consumption rate and annual total gallons consumed by operating activity, freezer storage and throughput capacity, and processing line throughput capacity by species and product. Annual revenue is

reported from fishery product sales, quota leases, and other vessel operations income. Annual total capital expenditures are reported for fishing gear, processing equipment, other equipment, and other vessel capital; and annual non-labor vessel operating expenses are reported for fuel, lubrication, provisions, repair and maintenance, vessel/equipment lease costs, fishing gear purchases, leases and repair costs, freight and storage costs for product sales, other freight and storage, materials, observer fees and reporting/monitoring costs, cooperative fees, general administrative/management overhead, vessel insurance, fisheries landing taxes, total cost and volume of raw fish purchases, and QS lease quantity and costs by A80 species. Gross labor costs are reported for deck crew, processing crew, and all other on-board crew, and average crew size and annual employment grouped by deck, processing, and all other on-board crew, and the use of share-based compensation for processing non-processing crew is indicated.

Beginning in 2016, the revised Annual Trawl CP EDR added collection of individual commercial crew license or CFEC gear operator permit numbers for all individual crew members that worked on the vessel during the calendar year.

Amendment 91 Chinook salmon EDR

The Amendment 91 EDR is comprised of three separate forms: the Compensated Transfer Report, the Vessel Fuel Survey, and the Vessel Master Survey.

The Compensated Transfer Report (CTR) is intended to collect transaction-level data on all bipartite transfers of Chinook PSQ allocation units during the pollock season in which monetary payment is included the transaction (i.e., “in-kind only” transactions are exempted). The form is to be completed by all entities participating as lessor or lessee in one or more “compensated transfers” of Chinook PSC; however, no such transactions have been reported, and all CTR form submissions to date have been “certification-only” submissions.

The Vessel fuel survey is required for all AFA vessels that harvested BSAI pollock during the previous year, and collects four data elements, including: average hourly rate of fuel consumption for the vessel while operating in the BSAI pollock fishery, reported separately for fishing and transiting; and total annual amount (in gallons) of fuel loaded to the vessel during the year, and total fuel cost.

The vessel master survey is comprised of a series of qualitative response questions regarding fishing and bycatch conditions observed by vessel masters during the BSAI pollock fishery, and factors in effect that motivated Chinook bycatch avoidance.

The structure of the A91 EDR is distinct from the other three EDRs in that it is modular, with AFA vessel owners as the primary submitter group, from which all three of the forms are required. The CTR form is also required from PSC entities, for whom it is the only EDR requirement.

Gulf of Alaska trawl EDR

The Trawl CV EDR form is required for all trawl CVs that harvested groundfish in the GOA during the previous year. The GOA Trawl CV EDR form collects the estimated market value and replacement value of vessel; fishing gear costs; lease, installation and repair of (a) salmon and halibut excluder gear, and (b) trawl gear; annual total fuel and lubrication cost and gallons; total labor payments to (a) crew and (b) captain, and number of crew, for GOA groundfish only; and commercial crew license number or CFEC gear operator permit number, by individual crew member that worked on vessel during GOA groundfish trawl fishing.

The Annual Shoreside Processor EDR form is required from all shore-based processors that receive and process groundfish from GOA trawl fisheries. These forms collect the estimated market value; Borough assessed value or replacement value; municipal water utility consumption, gallons and cost, by month for

Kodiak plants only; municipal electrical utility consumption, kilowatt-hours and cost, by month for Kodiak plants only; processing labor gross wages and hours for groundfish processing only, by month and housing-status (housed, non-housed); number of processing employees, by month, groundfish only; and total annual non-processing employment, number employed, total wages and salaries.

Summary overview of EDR variables by EDR form

An examination of all data elements collected in the EDR program as a whole (with the exception of the A91 Vessel Master Survey) indicates a number of inconsistencies, at different scales, across EDR forms. The most obvious disparity is the relative comprehensiveness of the content reported in the A80 EDR form, which efficiently collects measures of the physical capital stock of the vessel, and collects revenue and costs using a framework that is fairly consistent with standard financial accounting categories. In contrast, crab CV and CP EDR forms collect fewer categories of operating costs but require stratification by individual crab fishery. At a finer scale, there are notable inconsistencies across EDR forms in the specification of individual data items, as in the GOA CV reporting of trawl gear and excluder devices combines capitalized expenditures (paid over multiple years) with annual expenses, compared to separate treatment of fishing gear capitalized and expense costs in the Trawl CP form. Also, notably, the GOA CV form includes three alternate scales of reporting: values aggregated to total annual value, GOA trawl value, and GOA groundfish value.

Historical overview of EDR development process

A review of the documentary history of the Council and NMFS efforts to develop economic data collections spans 20 years of Council minutes and federal register notices. The timeline is drawn largely from Council minutes and follows the course of significant actions and events in the development of each of the respective EDR collections, initially through the Council process, followed by rule-making and OMB review processes, to administration of annual EDR submissions and production of data.

The original draft Crab EDR forms developed by the Council-appointed data collection committee were adaptations of a previously fielded voluntary survey in the pollock fishery in 2000 and were intended to support the production of the same set of standard economic and financial performance metrics that pollock industry and AFSC economists had spent two years developing. As such, the committee retained an equivalent scope of variables in the Crab EDRs but *increased* the level of disaggregation. However, in order to address community effects of rationalization, the crab forms added disaggregation by location of purchase for most of the cost variables. The result of the additional layers of stratification resulted in surveys of daunting complexity; however, industry representatives on the data committee were nonetheless confident that they could be completed and pretesting of the forms with a small number of volunteer vessel owners and accountants was reasonably successful.

The design of the A80 EDR also started by adapting the voluntary pollock CP survey and relied on the same conceptual framework of measures and metrics. The Council's purpose and need for the A80 EDR was more narrowly focused on assessing economic performance within the A80 sector, and in particular, the effectiveness of efficiency gains achieved by the program in mitigating operational costs of bycatch avoidance measures. As such, rather than increasing the complexity of the pollock survey by adding additional stratification, the A80 survey simplified the original by eliminating by-fishery disaggregation and limited required reporting to annual aggregate values for most variables. As a result, the reporting burden and cost are much lower, the accuracy of the data reported is sufficient for use in most applications, and the analytical framework originally conceived in the design of the EDR has been effectively applied in the A80 5-Year Review and is used as the basis for annual updates of the A80 chapter of the Groundfish Economic SAFE. However, in simplifying the A80 EDR from the more disaggregated detail used in the pollock survey, significant data quality may have been sacrificed, but this has not proven to be a critical limitation for the Council's purpose thus far.

The outcome of the original Crab EDR was markedly different. The two-step approach used in the pollock survey, reporting annual aggregate values in the first step, followed by disaggregating fishery-level values in the second step, may have prevented some of the ensuing problems. This would likely have been straightforward and unchallenged on the basis of accuracy or burden. The complexity of the crab EDRs, however, resulted in excessive burden and heightened doubts about the quality of the data. Annual-level data would also have been made available to Council staff much sooner and synthesized into information of utility to the Council much sooner, with a clearer path to rebalancing the burden and data quality in revising the EDR design.

Beginning in February 2008, the Council initiates a metadata review process recommended by PNCIAC, specifying a series of public meetings for staff to present EDR metadata, receive comments and recommendations provided by PNCIAC and the public and then to be incorporated “as appropriate” into a revised draft metadata document, and final comments and recommendations resulting from the review to be provided to the Council by PNCIAC. The result of that process was the introduction of an A/B/C data quality grade, summarizing the comments and recommendations AFSC received from PNCIAC and crab industry members as a summary indicator of data quality in the EDR metadata.

The Council took final action at the December 2009 meeting on its preferred alternative for the A91 Chinook salmon EDR, which pursued a narrow data collection and analytical objective focused on assessing the effectiveness of specific bycatch avoidance incentives measures under Amendment 91. The preferred alternative limited cost data collection to two items relevant to bycatch avoidance choice behavior (fuel and Chinook salmon PSC). The alternatives considered for analysis did not include additional data collection items and analytical methods recommended by AFSC to more fully capture the direct and opportunity costs of bycatch avoidance and other factors forming the economic context of bycatch avoidance choices.

The discussion paper reviewing economic data collection objectives and associated data needs was presented at the February 2010 meeting. The paper covered some of the same history discussed here and offers additional insights on the process. The paper made several recommendations, three of which appear to have been influential in subsequent Council actions: data collections should be: (1) implemented independent of major management actions; (2) limited to data that inform management decisions, are not duplicative, and can be accurately and cost effectively collected; and (3) should be developed deliberately and incrementally. The Council tasked staff to begin an analysis of the Crab EDR, resulting in the developing Amendment 42, in which the Council altered its purpose and need but is unclear to what degree this purpose and need modified or superseded what had previously been conveyed as the fundamental purpose of economic data collection in the purpose and need statements and analyses for the Council’s previous action. Previously, the purpose of economic data collection had been described in analyses as collecting data to permit economic analysis, using specific metrics recognized by economists and policy makers as indicators of economic performance.

Relatively soon after the Council adopted their preferred alternative for Amendment 42 amending the crab EDR program, the Council approved a motion tasking a discussion paper developing proposed elements and options on a baseline economic data reporting program for Western and Central GOA trawl industries, including harvesters, processors, and catcher processors. In June 2013, the Council reviewed the draft RIR/IRFA for GOA Trawl Data Collection and adopted a modified Alternative 2 as the preliminary preferred alternative. (PPA). On final review in October, the Council adopted the preferred alternative, developing the GOA Trawl EDR, revising the A80 EDR form, requiring a third-party data collection agent and blind data protocol for CV and shoreside processor data, and data verification consistent with Crab EDR audit protocols. OMB approved the PRA clearance for the GOA trawl EDR in December 2014, with a June 2016 deadline for the first year’s EDR submission. The Council postponed further action on GOA Trawl Bycatch Management in its December 2016 meeting, but the GOA Trawl EDR reporting requirements remain unchanged.

EDR Program Operations, Costs, and Limitations

Summary of EDR program operations

Data Collection to date

Summary of EDR forms submitted and reporting compliance

In the three years in which all four EDRs have been collected (2015-2017), an average of 376 forms are returned annually, with the Crab EDR representing 90 forms, A80 accounting for 19 forms, GOA trawl CVs averaged 68 forms while there were 10 shoreside processor forms returned, and the A91 EDR averaged 63 fuel survey forms and 118 vessel master surveys. Compliance with EDR submission requirements is effectively 100%. Gross non-compliance with EDR submission requirements has been limited to a small number of cases that involved bankruptcy and/or more extensive violations of federal fishery regulations.

Data verification/audit administration

EDR data verification is required under EDR rules in 50 CFR 679 and 680. The rules state that “the DCA shall...” (680.6), or “NMFS, the DCA, or the DDCA will...” (679 subsections 65, 94, and 110) “conduct verification of information with [a person required to submit the applicable EDR or a designated representative]”. In the subsections that follow this *shall* direction to the DCA, the rules require the EDR submitter to respond to inquiries from the DCA within 20 days, require the submitter to provide supporting records to the DCA as requested, and authorize the DCA *auditor* to review the records for the purpose of substantiating values reported in the EDR.

EDR data verification currently employs a series of validation procedures, including 1) primary, automated data validation procedures programmed and maintained by AKFIN on the EDR database, 2) secondary validation employing statistical procedures and visual inspection to identify data anomalies and statistical outliers, and 3) editing and imputation for data errors identified by data users that were not detected and corrected in primary and secondary validation.

Two issues that have emerged from the practical experience of AFSC and PSMFC in working with CPA firms under contract are especially worth noting: 1) in all audits reviews conducted since 2006, there has not been a single finding of intentional misreporting, or of any bias in the direction of reporting errors identified by auditors; and 2) verifying the quality of results produced by auditors requires considerable effort by AFSC and PSMFC. On the latter point, contracting for the services of CPA firms to conduct data validation audits is not straightforward, and the tasks involved are unfamiliar to CPAs and require one or two iterations to gain experience. However, CPA firms face staff turnovers and can't be relied upon to maintain staffing stability for EDR contracts, and PSMFC is required to issue RFPs to renew ongoing service every three years at minimum.

Program expenditures and cost recovery

This section describes the financial cost of implementing the EDR Program and identifies those costs have been recovered from the fishing industry by the National Marine Fisheries Service. The focus is on the cost recovery amounts rather than the full cost to the NMFS, because NMFS did not calculate the in-kind contribution of staff time on EDRs until required to do so for cost recovery purposes.

Three of the four EDRs have some portion funded through cost recovery. The one exception is the GOA Trawl EDR, which is not part of a catch share fishery and is therefore not subject to cost recovery. Therefore, only the PSMFC administrative costs for the GOA Trawl EDR are included for comparison.

The other exception is the AFA pollock fleet, for which NMFS only collects cost recovery fees from the in-shore (catcher vessel) sector.

The costs have been quite variable in the Crab EDR Program, which averaged \$286,013 over all years, and fluctuates largely due to changes in the cost of audits and the costs associated with database administration, support, and changes to the EDR forms. Costs have remained relatively stable in the A80 EDR, averaging \$90,733/year for the first three years of cost recovery (2016-2018). For the inshore sector of the A91 EDR, the only sector from which EDR Program costs are now recovered, costs have averaged \$57,260 per year since costs have been recovered since 2016. The PSMFC administrative costs of implementing the GOA Trawl EDR, have averaged \$70,159 per year over the four years of the data collection, with costs varying largely due to changes in the need for audits.

While these costs are not insignificant, they represent a small fraction of the ex-vessel value generated by these fisheries, with EDR-related costs averaging 0.15% of the ex-vessel value for the Crab EDR, 0.09% for the A80 EDR, 0.04% for the A91 EDR, and 0.10% for the GOA Trawl EDR. Ex-vessel values for the Crab EDR, A80 EDR, and A91 EDR come from the annual cost recovery reports, while the values for GOA Trawl represent their GOA Trawl related ex-vessel revenue for all vessels required to submit a GOA Trawl EDR and were calculated directly by AKFIN.

Estimated costs to industry of preparing and submitting EDRs

Under the PRA, NMFS is required to obtain approval for new information collection requirements implemented through Federal regulations and for voluntary requests for information. For each of the four EDRs, NMFS provides estimates of the estimated number of respondents for each form or component each year, the estimated hours it takes to submit the required information, the estimated cost per hour for preparing and submitting each response, the estimated total cost per respondent, and the estimated total cost for all respondents. The estimated total cost of submitting the required EDR information for each of the four EDR programs approximately \$312,000 per year for respondents to provide the information required for the crab EDR; approximately \$19,000 per year for the Amendment 80 and GOA trawl catcher/processor EDR, approximately \$48,000 per year for the GOA trawl catcher vessel and processors EDR, and approximately \$60,000 per year for the BS Chinook salmon bycatch EDR. These are the cost estimates for submitting the required information and are in addition to the EDR administrative costs described above, some of which are recovered from the industry through cost recovery.

One factor in the fairly wide range of costs to submitters across programs are the different estimates of costs per hour among the EDR programs. The \$37 per hour estimate is an average per hour cost estimate used for many different forms in most of NMFS' information collections and is applied in the A80 and GOA Trawl EDRs, but an estimate of \$165 per hour for the crab EDR and \$75 per hour for the A91 EDR are based on comments received on past EDR renewals with explanations of the type of expertise needed to complete these particular EDRs and the associated costs per hour for people with this expertise. As stated earlier, NMFS presents its burden hour and cost per hour estimates for public comment and generally updates and revises them if it receives information that supports doing so.

Limitations of EDR data

Limitations of the EDR Program span a range of issues, and include limitations on the quality and utility of the data collected in the respective EDR forms that arise from the conceptual design of the data collections, to challenges in making the data that has been collected more readily accessible to analysts, more salient to the analytical applications intended by the Council, and more informative to the public. Some variables, including vessel activity days and processing line throughput capacity on the A80 EDR form are somewhat duplicative of data reported elsewhere, or may not be the best source for these data.

Assessing the utility and useability of EDR data requires a consideration of the context in which the data are (or aren't) being used. To varying degrees, the EDRs were designed by the Council to support assessment of particular effects of management measures, as in the case of the A91 EDR. The useability of the EDR data collections in regard to specific applications intended by the Council is separate from the broader consideration of utility and useability of the data collections to support more general analyses, for example, in ongoing assessment of the status of the Council's social and economic objectives described in the FMPs, or to providing a common set of economic performance metrics that are generally applicable to industry sectors.

An important limitation on the use of EDR data for specific applications is the frequency with which the particular management issues are taken up for consideration by the Council. For example, the Council's intent in initiating the GOA Trawl CV and processor EDRs was to establish a baseline of economic data for use in analyzing the effects of a change to catch-share management. Notwithstanding the suspension of GOA rationalization, the intent of the Council was to use the EDR to accumulate a set of baseline measurements, against which later measurements collected after a management change could be compared.

The broader issue of useability of EDR data is primarily limited by the fragmentary nature of the various data collection forms. There are only a small subset of variables that are somewhat consistently collected across the EDRs, e.g., harvesting and processing labor costs, crew identifiers, and fuel costs. Most of the rest of the variables collected are unique to a particular EDR form. Apart from the more fundamental limitations of not having general purpose EDRs that are administered consistently at the sector-level, the fragmentary nature of the distinct sets of variables collected in the current EDRs, and the distinctions between EDRs in the way a given variable is measured, e.g., fuel cost, substantially limits the utility of the data, particularly in the context of Council analyses.

The ability of analysts to produce informative analysis requires familiarity with the base of readily available data. Although EDR data are available to analysts through AKFIN, the fragmentary information that EDRs provide limit the potential for analysts to become sufficiently familiar with the data to enable general usefulness.

Applications of EDR data in analyses

Despite numerous limitations, the EDRs together provide considerable valuable insights into the economic behavior of the fishing industry. While this understanding has had a number of specific valuable applications, the EDRs have given analysts who use the data a deeper understanding of the diversity within and across fleets. For example, from the Chinook salmon EDR skipper survey, it is clear that the pollock fishery is balancing a complex range of management challenges. Having a census of all skippers reveals that different fishers have very different experiences in any given year, and that features such as the extent of sea ice vary considerably and impact fishing choices and the difficulty of avoiding Chinook salmon bycatch. In addition, all of the EDRs provide insights into the differences across the vessels in the fleets they represent. This illustrates that some vessels may be much more flexible at moving in response to changing target and bycatch encounter rates.

EDR Data Annual Reporting

To assess the performance of the Amendment 80 fleet under the rationalization program and subsequent changes in fishery management Economists and analysts at the AFSC use the Amendment 80 EDR data collection to prepare an annual summary report that is included as a chapter to the annual publication the Economic Status of the Groundfish Fisheries off Alaska. The reported statistics provide a general overview of fishery performance over time and are not intended as a rigorous statistical analysis of specific hypotheses regarding economic efficiency or other performance metrics.

The annual summary of Crab EDR data is prepared as part of the Economic Status of the BSAI King and Tanner Crab Fisheries off Alaska (Garber-Yonts and Lee, 2018). Statistics on harvesting and processing activity; effort; revenue; labor employment and compensation; operational costs; and quota ownership, usage and disposition among participants in the fisheries are provided.

Council program reviews

Both the 5-year and 10-year crab program reviews relied on EDR data to document fleet performance with regard to quota usage and leasing, effort levels, vessel operating costs, gross and net earnings, crew participation and crew earnings. This information is also used to document changes in crew employment and compensation and state of residency of crew. Processing labor, employment, and wages are also assessed using EDR data. The 10-year crab program review Social Impact Assessment (SIA) utilizes EDR data along with other data sources to provide, within the bounds of data confidentiality constraints, a quantitative participation description by community, including harvest trends by crab fishery, local community fleet participation, catcher vessel crab harvest volume and value by community, community processor participation, processor volume and value by community by share type, and quota share distribution by community for Alaska, Washington, Oregon, and other U.S. states combined. The 10-year Crab Rationalization Program review also summarizes the social impacts of crab rationalization by community, including discussions of vessel participation, catcher vessel owner shareholdings, crew participation, catcher vessel crew shareholdings, locally operating processors, support services, and local governance and revenues.

In 2017, a program review was conducted for the Central GOA Rockfish Program. This program review also included an SIA that made extensive use of EDR data by developing cross-walk tables for catcher vessel ownership address community and community of residence of crew on those vessels, along with payments to labor information, which gave a look at the “employment footprint of the fishery” in a way that could not be done without EDR data.

The Amendment 80 program 5-year review was completed in 2014 (Northern Economics, 2014). The review provides an overview of the EDR data collected and uses the data to summarize expenses and revenues fleet wide. Operating expenses, including payments to labor, are documented and the EDR data is used to develop a cash flow model.

Use of EDR Data in Analyses

EDR data have been used in several regulatory action analyses, such as for analyzing crew employment in the 2014 Final Steller Sea Lion EIS, are currently being used in a regulatory impact review of allowing Halibut Deck sorting in non-pollock groundfish trawl fisheries, have been utilized in projects related to groundfish and crab stock assessments, particularly through parameterizing bioeconomic models. EDR data have also been used in several journal articles and/or technical memos that evaluate fishery productivity and efficiency changes and analyses of the economic contribution of Alaska fishing fleets to different regional economies including Alaska.

Several recent Council action analyses have used EDR data. The 2016 GOA trawl bycatch management analysis included an SIA that made extensive use of EDR data. In addition, EDR data was used in the recently completed (3/8/19) analysis titled BSAI Final Review Draft Social Impact Assessment: Catcher/Processor Mothership Restrictions in the Bering Sea and Aleutian Islands and the Gulf of Alaska when taking Directed Non-CDQ Pacific Cod Deliveries from Trawl Catcher Vessels. However, in this case inconsistent EDR data coverage across sectors limited the use of EDR data so that consistent information is provided about each sector. This recent example highlights the limitations of the program-specific nature of the EDR Program and how fair treatment across sectors will result in analyses,

particularly those involving (re)allocations, which may exclude important economic information about the sectors from EDR data if comparable data are not available across all sectors under consideration.

Analyst Feedback

Analysts from the Council staff, NMFS staff, and contractors who have used EDR data or analyzed the associated fisheries provided useful feedback on the EDR collections. In cases where EDR data was not used in analyses where it may have been helpful, analysts may not have full access to the data or feel that they did not have the familiarity and/or technical skills to access the data without assistance. Further, it has been reported by analysts that the technical aspects of using EDR data necessitates advanced planning to obtain assistance with the data access and management tasks and the economic analysis skills needed to use the EDR data. Analysts have also indicated in some cases the alternatives to be analyzed in a council action are not always directly informed by the EDR data currently collected.

EDR Program Assessment and Recommendations

The discussion paper concludes with several short term and long-term recommendations for the Council's consideration. The two recommendations to reduce costs and burden in the short term are to revisit the purpose of and need for third-party data verification audits and review duplication of reporting requirements in the EDR Program with other existing reporting requirements.

The longer term, overarching, recommendation is for the Council develop a systematic approach to identifying and prioritizing the Council's needs for economic and social science information. While NMFS has many actionable suggestions for ways to improve the EDR Program, this discussion paper intentionally does not try to address any of these as it would presuppose that the Council's purpose and need for each of these data collections or assume that they have not changed since the programs were most recently modified. The data collections could be modified to address known problems, scaled back or expanded in the information collected, revised to be collected at a different frequency for all or some variables, or the survey design could be modified to a sampling framework with a sufficiently large sample population. The program could also be modified to reduce data collected from some EDR Program fishery participants and instead increase the data collected from some groups that are not subject to EDR requirements, such as quota shareholders. However, each of these changes would impact the potential uses, utility, cost, and burden of the data collection and these tradeoffs are more appropriately addressed by the Council with guidance from the NMFS.

2 Introduction

This discussion paper provides information and recommendations about the four Economic Data Reporting (EDR) programs that the North Pacific Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS) have implemented in the federally managed groundfish and crab fisheries off Alaska. The EDRs gather various levels of ownership, revenue, cost, vessel operations, and employment information from vessel owners, vessel operators, processors, permit holders, and leaseholders who participate in several of the catch share programs in the North Pacific fisheries. The catch share programs that are subject to some form of EDR requirements are the Bering Sea and Aleutian Islands (BSAI) Crab Rationalization Program, Amendment 80, the Gulf of Alaska (GOA) Rockfish Program, and the Bering Sea (BS) pollock fisheries managed under the American Fisheries Act. In addition, the Council and NMFS also implemented EDR requirements for the GOA trawl catcher vessels and processors in fisheries not yet managed under a catch share program. For the sake of brevity, the individual EDRs are referred to hereafter as the Crab EDR, A80 EDR, A91 EDR, and GOA Trawl EDR, and are collectively termed the EDR Program.

The following four EDRs are addressed in this discussion paper:

- BSAI Crab EDR, implemented in 2005 (*Crab EDR*);
- Trawl Catcher/Processor (CP) EDR implemented in 2007 for Amendment 80, and in 2015 for CPs operating in the GOA groundfish fisheries (*A80 EDR*);
- BS Chinook salmon bycatch management program EDR for participants in the BS pollock fishery, implemented in 2012 (*A91 EDR*); and
- GOA trawl EDRs for trawl catcher vessels operating in the GOA and processors taking deliveries from these vessels, implemented in 2015 (*GOA Trawl EDR*).

In general, the purpose of the EDR requirements are to gather information to improve the Council's ability to analyze the economic effects of the catch share or rationalization programs, to understand the economic performance of participants in these programs, and to help estimate impacts of future issues, problems, or proposed revisions to the programs covered by the EDRs. For example, the EDR implemented for GOA trawl catcher vessels and processors not managed under a catch share program was implemented to collect relevant baseline information that could be used to assess the impacts of a future catch share program on affected harvesters, processors, and communities in the GOA (NPFMC, 2014 and 79 FR 71313; December 2, 2014). The BS Chinook salmon bycatch EDR was implemented to provide additional data to assess the effectiveness of the Chinook salmon bycatch management measures in the BS pollock fishery (77 FR 5389; February 3, 2012).

The Council discussed the EDRs in several meetings during 2018. Public testimony at the February 2018 Council meeting noted that the EDR programs had been in effect for some time, and industry was spending time and money to complete the reports, in some cases reimbursing NMFS for the administrative costs of the EDR programs through catch share cost recovery programs. The testifier suggested that the Council review the EDR requirements to determine whether and how the data was being used, whether it was being collected efficiently, and whether the data collection programs were meeting the Council's needs.

In April 2018, the Council reviewed a discussion paper prepared by NMFS that provided information related to NMFS's request that the Council review all its regulations to identify any that were outdated, unnecessary, ineffective or could be further streamlined (NMFS, 2018). This discussion paper included reference to the Council's February 2018 discussion of the EDR requirements as a possible area of regulations for future Council review. In addition, at the April 2018 meeting, the Council also heard

public testimony raising the question of whether the EDR requirements for the GOA trawl catcher vessels and processors had met Council's purpose and need to collect baseline information to assess the impacts of a potential future catch share program in those fisheries.

Later in the April 2018 meeting, in response to this public comment and further discussion among Council members, the Council requested that NMFS prepare a discussion paper that describes the EDR requirements for all programs, explains how the data are used, and provides estimates of the costs of complying with the EDR requirements. The Council's motion stated that the Council could then use the information in the discussion paper to determine if revisions to EDR requirements are needed and, if so, the priority and process for analysis of proposed revisions. This discussion paper provides the information requested by the Council in April 2018.

In addition to the Executive Summary and this Introduction, the discussion paper is organized into four sections. Section 3 addresses scientific and analytical standards relevant to the EDRs which includes information about the requirements for economic analysis of fishery conservation and management actions and programs to provide the rationale and need to collect economic information about the fisheries. It also provides a review of scientific literature and best practices regarding the elements of survey design and data quality that are relevant to evaluation of the EDR programs. Section 4 contains a description of and history of the North Pacific economic data collection programs. Section 5 contains information about EDR program operations, costs, and limitations. Section 6 provides NMFS' recommendations.

3 Scientific and Analytical Standards

3.1 Requirements and Guidance for Economic Analyses

A variety of Federal laws and Executive Orders require the preparation of a written analysis of the economic impacts of proposed fishery conservation and management actions developed by the Council. Foremost among these are the Magnuson Stevens Fishery Conservation and Management Act (MSA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), Executive Order (E.O. 12866), and, more recently, E.O. 13771.

The MSA requires that the Councils prepare fishery management plans for each fishery under its authority that requires conservation and management (section 302(h)(1)). Section 303 of the MSA specifies the contents of the FMPs. Many of these content requirements are related to economic aspects of the fisheries, including requirements for information about the participants, gear types, operational modes, harvest levels, revenue, and the cost likely to be incurred in management. Each FMP or amendment to a FMP must include a “fishery impact statement” which must, among other requirements, analyze the “conservation, economic, and social impacts” of the plan or amendment (section 303(a)(9)).

The MSA also requires that any FMP or FMP amendment must be consistent with ten national standards (section 301(a)). Each of the national standards has some relation to economic aspects of the fisheries. However, the most direct references to economic impacts are in National Standard 1 (NS1) which relates to achieving optimum yield, National Standard 4 (NS4) which recommends the fair and equitable allocation of fishing privileges, National Standard 5 (NS5) which requires consideration of efficiency and prohibits economic allocation as the sole purpose of an action, National Standard 7 (NS7) which requires minimization of costs, and National Standard 8 (NS8) which requires consideration of the importance of fishery resources to fishing communities and specifically references using the best available economic and social data. Determinations about the consistency of a proposed action with the National Standards relies, in large part, on the economic analysis prepared for a proposed action. In addition to the general requirements of the MSA, section 303(b)(6) contains a specific list of factors that the Council and Secretary of Commerce must take into account when establishing a limited access system for a fishery. Most of these factors are related in some way to economic considerations.

NEPA requires Federal agencies to consider the interactions of natural and human environments, and the impacts on both systems of any changes due to governmental activities or policies. This consideration is to be done with “a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences ... in planning and in decision-making” [NEPA Sec. 102(2)(A)] and, further, to “identify and develop methods and procedures,, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations” [NEPA Sec. 102(2)(B)]. In addition, NOAA’s NEPA implementation guidelines require that the environmental impact statement (required under NEPA Sec. 102(2)(C)(i)) include biological, ecological, economic, and social consequences. Social science data and the models they support are needed to conduct the required analyses and to predict the behavioral response of fishermen and others that affect the biological, ecological, economic, and social consequences (AFSC 2019).

The Regulatory Flexibility Act (RFA), enacted in September 1980, requires agencies to consider the impact of their regulatory proposals on small entities, to analyze effective alternatives that minimize small entity impacts, and to make their analyses available for public comment ([SBA, 2010](#)). Small entities are identified based on either an income or employment thresholds. The RFA requires analysis of the costs and burden of information collection requirements on industry participants.

E.O. 12866 (58 FR 51735, October 4, 1993) is the primary Presidential Executive Order that requires the preparation of economic analyses of regulations implementing fishery conservation and management actions. Specifically, E.O. 12866 requires:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

Council and NMFS staff comply with E.O. 12866 by preparing a Regulatory Impact Review (RIR) for each conservation or management action that will be implemented through Federal regulations.

More recently, E.O. 13771 was issued on January 30, 2017. This E.O. is intended to manage the costs of government regulation on private industry and is the source for the policy that two deregulatory actions are needed for every regulatory action that is significant under E.O. 12866 and that imposes costs on industry. To comply with this E.O., NMFS prepares a worksheet for each proposed rule that identifies whether the proposed action is reducing costs or imposing costs and, if known, the amount of the cost or cost savings. NMFS relies on the RIR to provide the necessary information about the costs of a proposed rule.

NMFS issued guidelines for the preparation of economic analyses to meet the requirements of E.O. 12866 and the RFA, two of the most direct mandates for the preparation of economic analyses. "[Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions](#)" (NMFS, 2007) addresses the procedural and analytical requirements of E.O. 12866 and the RFA. The guidelines state that "[A]lthough a benefit-cost analytical framework is prominent in meeting the intent of E.O. 12866, it also requires broad consideration of the distributive effects and economic burden that may be imposed on individuals, businesses of differing sizes, as well as small communities and governmental entities... Meeting the broad analytical requirements of E.O. 12866 requires consideration of both benefits and costs of regulatory alternatives from a National perspective, as well as from that of the private individual or firm." In addition, the RIR must provide the information necessary to evaluate the change in net benefits to the Nation from each of the alternatives, and not just for the preferred alternative or proposed action.

NMFS's guidelines do not prescribe particular economic analysis methods, a required level of analysis, or specific data collection elements, but state that the analysis "should include a good qualitative discussion of the economic effects of the selected alternatives. "Quantification of these effects is desirable, but the analyst needs to weigh such quantification against the significance of the issue and available studies and resources." The appropriate analysis depends "on circumstances to be analyzed, available data, the accumulated knowledge of the fishery and other potentially affected entities, and on the nature of the regulation option." However, the guidelines also state that "a quantitative analysis should be substituted for a qualitative analysis whenever feasible (i.e., when adequate data, resources, and defensible analytical models are available)."

The NMFS guidelines recommend that, where possible, analysts evaluate factors such as "potential changes in prices, timing/quantity/quality/forms produced or consumed, fishing or observational trips, etc., as a result of changing supply and demand conditions in the marketplace. This information can be used to determine consumer surplus for various fishery products or activities and provides a partial measure of net benefits from the fishery." The guidelines also refer to the desirability of analyzing changes "in revenues and operating costs for firms or individuals in the fishery, in response to changes in

market, biological conditions, and fishery management regulations. Analysis of firm-level changes provides an indication of how producer surplus may change and, for small entities, the impact of regulatory actions. This firm-level analysis characterizes changes in harvesting costs and outputs in the fishery and may also be used to assess changes in potential industry output levels and fishing season length. Similar analyses can also be developed for the recreational sector and for non-consumptive users of the resource.”

The NMFS guidelines also advise the analyst to evaluate “how the regulation is expected to affect fishing fleets, and the fishery dependent communities they support. Fleet size and composition may change in response to market prices, biological conditions, and/or the regulatory environment. Consideration of price and operating cost changes will permit an evaluation of how aggregate fleet size and composition may change...Projected changes in size, composition, and geographic distribution of fishing fleets may permit extrapolation of fleet level impacts to the communities (or regions) from which the fleets operate. Participation rates within recreational fishing modes, and for non-consumptive user groups, should be addressed in a similar manner, where relevant.”

The laws, E.O.s, and agency guidelines strongly support the collection of high quality economic data and the most robust quantitative analysis possible given the data and analytical methods available and the scope and complexity of the particular issue. However, these laws, E.O.s, and agency guidance do not require the collection of specific economic data or the application of specific quantitative methods to implement fishery conservation and management actions, including catch share and limited access programs. These programs may be implemented, managed, and evaluated using the best scientific data available and with both qualitative and quantitative analytical methods, as determined appropriate by the Council and NMFS, and consistent with the requirements of the applicable laws and E.O.s.

Given that the guidelines for social and economic analyses outlined above are generally contingent on available data, the discretion exercised by NMFS and the Council regarding the scope and quality of economic data collections implemented through FMPs and federal fishery regulations determines the scope of analyses. To an extent, this is analogous to MSA provisions that apply to the Council’s process for specifying MSY and status determination criteria (SDCs), which allow FMPs to be implemented despite incomplete scientific information and data-poor stocks. MSA and the National Standards place responsibility on the Council for weighing the adequacy of available proxy measures of NS1 reference points against the potential management value of improved proxies.

In contrast to the mandate under MSA to achieve MSY for fishery resources, the social and economic mandates and guidelines discussed above are multivariate and qualitative, and lack an analytical framework equivalent to that articulated in NS1. With limited exceptions, which include EDR data, the best economic data that are consistently collected and produced for commercial fisheries of the North Pacific are ex-vessel and first-wholesale volume and gross revenue data. These data provide the basis for proxy measures of economic status and performance roughly equivalent to NS1 proxy measures available in the absence of fishery-independent stock surveys.

A review of the Council record indicates numerous statements of intent to develop broad, comprehensive economic data collection across all fisheries managed under its FMPs, with the clear support of both the Advisory Panel (AP) as well as the Scientific and Statistical Committee (SSC). The lack of progress toward this goal, and the limited success of the EDR program, are to some degree attributable to the lack of a framework comparable to that articulated under NS1 for effectively applying economic and social science information to management decisions.

3.2 Business data collection design and evaluation

The EDR program is small relative to other data collection systems operating within North Pacific fishery management, such as eLandings or the North Pacific Observer Program. Although smaller in scale, many of the functions and processes involved in developing and implementing a more complex data system, such as eLandings, are required for operation of the EDR program. The range of methodological concerns encountered in operation of a data collection system is extensive (see Snijkers et al. (2013)), and a comprehensive review of survey methodology and statistical data production is beyond the scope of this discussion paper. The following section highlights some key principles that are essential background for a review of the EDR program, in particular concepts related to business data collection design and relevant data quality assurance and quality control (QA/QC) methods.

To organize the discussion, it is helpful to consider a conceptual process model to help clarify the discrete functions and tasks involved in developing and operating the EDR program, from identification of goals and objectives, to evaluation of outcomes. The Generic Statistical Business Process Model (GSBPM; Figure 1) is used by government statistical agencies (e.g., U.S. Census Bureau) to conceptually organize and describe the processes involved in the design and operation of systematic statistical data collection and dissemination process.² Section 4 below provides an overview of the 20-year history of Council efforts to develop economic data and information that have culminated in the current EDR program. Over the course of that period, the Council has engaged in at least seven iterations of the process depicted in Figure 1 (not all of which proceeded past the initial phases). As the Council considers evaluating some or all of the current EDR programs, it may be useful to consider how the process model framed by Figure 1 has been realized in each iteration of Council EDR development, and the role that respective entities have in the distinct phases and sub-processes.

² The Generic Statistical Business Process Model (Snijkers et al. 2013; Vale 2009) is a product of international collaboration within professional societies associated with national statistical agencies (e.g., the American Statistical Association and US Census Bureau, respectively, noting that European counterparts have led development of GSBPM), and represents the convergence of two broader communities of practice in quality management: organizational quality management (see, e.g., (IOS, 2000)), and data quality assurance and quality control (D-QA/QC). That is, the GSBMP was developed as a tool for implementing principles of quality assessment and quality improvement in the contexts of both organizational structure and function of a complex enterprise, and of the operational structure of stages and sub-processes involved in the generalized process of designing and implementing a statistical information system. Figure 1 represents the model in the most general level, applicable to data systems of any scale from a single individual survey project to a system as complex as the broader North Pacific fishery information system described above. As a generalized process model, the GSBPM implies a sequential series of process phases, from specification of information needs, through design, implementation, and evaluation, and with sequential sub-processes associated with each phase. Effort and information generally flow from left to right and top to bottom, and, as a continuous improvement process, it is implicit that the outcome of the evaluation phase (9) reinitiates the process at the needs-assessment phase (1). However, the specific sequences depicted in Figure 1 are not intended to be definitive. The outcome of any phase or sub-process (or external events and conditions) may require the process to loop back to repeat a sequence beginning from an earlier sub-process or phase. If, for example, sub-process 4.3 Run Collection produces sufficiently poor results (e.g., less than 1% response rate to a voluntary survey), it may be necessary to skip ahead to the Evaluation phase, or where critical failure(s) can be identified, loop back to improve and re-execute an earlier phase or sub-process. Also, some of the enumerated sub-processes may not be relevant in a given application.

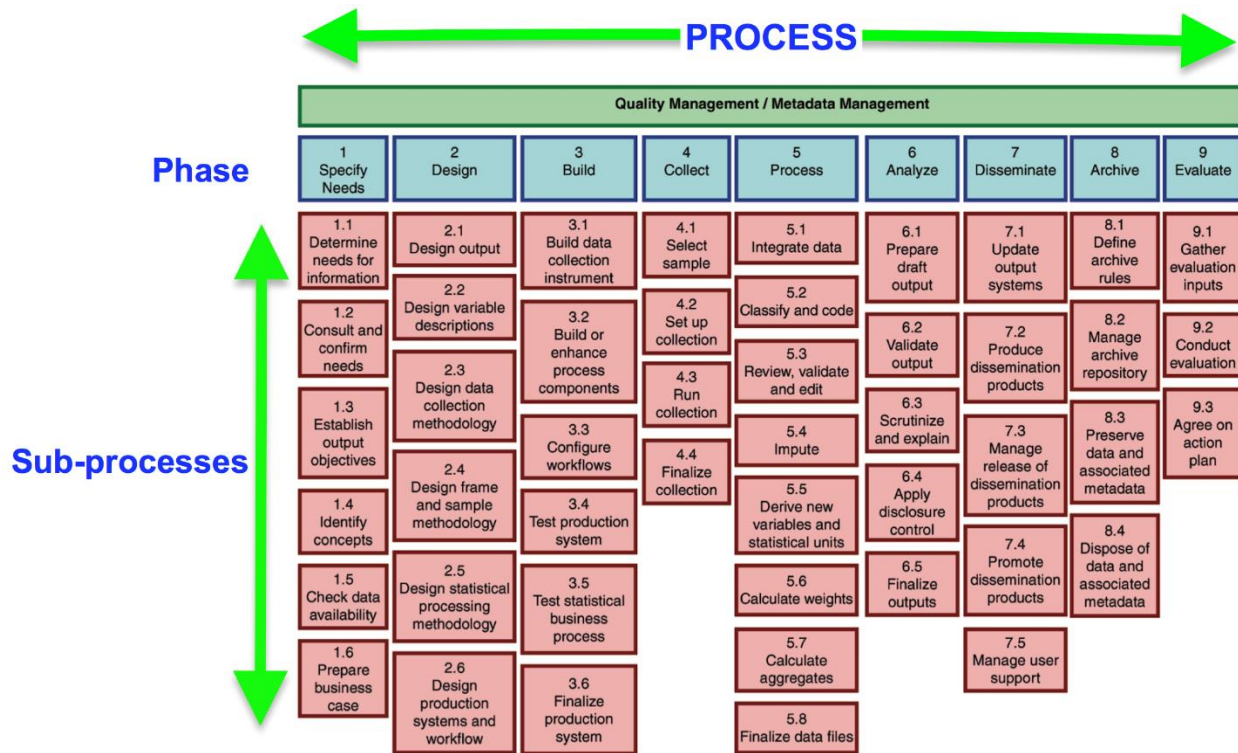


Figure 1 Generic statistical business process model (Vale 2009)

3.2.1 Measurement objectives and data applications

With notable exceptions discussed in Section 4.2³, the Council has been the principal actor in decisions at the (1) *Specify Needs* and (2) *Design* phases of the EDR process, exercising its broad discretion under MSA and National Standards Guidelines to identify analytical objectives and associated economic and social data requirements. In each iteration of the EDR development process, the range, scope and level of specificity of analytical objectives for each component of the program have varied, but the Council has consistently expressed a general intent to improve its ability to monitor and evaluate the performance of fishery management measures through improved understanding of the social and economic status of affected stakeholder populations, and of the behavioral responses of stakeholders to such management measures.⁴ The EDR program is unique in the North Pacific fishery information system in that each of the EDR data collections were developed 1) primarily by the Council, and 2) exclusively for analytical purposes associated with management program evaluation. That is, in contrast to the array of administrative or resource assessment data systems developed by NMFS, ADFG, and the Council (or under its oversight) the EDR program was developed by the Council solely for the purpose of providing statistical data to be used by analysts and researchers for the purpose of high-level monitoring and assessment of the social and economic effects, over time, of the associated catch share programs.

To clarify this distinction, The North Pacific fishery information system in regards to the human environment can be broadly divided between *administrative record systems* designed for primary uses in

³ Section 4.2 below provides a more detailed discussion of the analytical objectives identified in the Council's purpose and need statements for each EDR data collection, and the engagement of the Council, AKR, AFSC and other stakeholders in each phase depicted in Figure 1.

⁴ All of the EDRs have been developed in association with a pending catch share management action, and have been limited in scope to requiring submission only by entities participating (or expected to participate) in the respective catch share programs. In some cases, EDR design also excludes collection of data pertaining to submitters' activities not directly within the scope of the associated management program.

in-season fishery management and *statistical surveys* that are defined by the Office of Management and Budget (OMB) as those employing statistical methods, i.e., “a. *collecting data using any survey methods; b. doing any kind of estimation, imputation, or weighting; or c. pretesting or field testing for a survey, including cognitive interviews or focus groups from a total of 10 or more people.*” The large majority of fishery data collection systems fall within the former category designed for primary uses in in-season or ongoing fishery management, such as fishery permit registries, ADF&G fish tickets and Commercial Operators Annual Report, AKR’s catch accounting system, and other data collections associated with record keeping and reporting requirements under federal or state fishery regulations.⁵ With few (if any) exceptions, the primary purpose of such data collections is to facilitate NMFS and/or ADF&G execution of administrative procedures with respect to regulated entities, either individually or categorically (i.e., over a designated class of individual entities).⁶ Examples of statistical surveys in the human environment include surveys of recreational anglers to assess their catch, effort, and value derived from fishing (Lew and Larson 2012, 2015), social surveys of participant demographics, distribution, and preferences (Himes-Cornell et al. 2015), and the EDR forms.

Apart from primary administrative functions, data produced from administrative data collections are used extensively by NMFS, ADF&G and Council staff for analytical and statistical purposes. Statistical applications include use of data sets extracted from the catch accounting system in combination with other data sources in stock assessment models to estimate fishery mortality and other NS1 reference points. Analytical applications include use of landings data and COAR buyer report data to calculate aggregate ex-vessel revenues for use in regulatory review analyses. In general, the objectives of statistical and analytical data applications are to synthesize general information about a population of entities and to draw inferences regarding systematic differences captured in the data. In contrast to administrative data applications, which concern specific regulated entities individually, a single isolated data point is of negligible statistical or analytical value—and the inferential utility of a dataset in analytical/statistical applications decreases as the number of independent entities represented in the dataset declines.

The distinction between the EDR program and administrative data systems is important for several reasons. Administrative data are used routinely by agency staff to execute specific regulatory procedures, in many cases producing direct effects on specific regulated entities. As a result, the content of administrative data systems, procedures and applications for data use, and relevant data quality requirements and limitations are familiar to a relatively large number of both agency staff and data submitters. The much smaller scope of EDR data collections, and distinct decision support function it is intended for, limit the range and frequency of applications of the data and the pool of potential users. Many of the data collection procedures employed by the EDR program, including use of censuses (rather than sampling), mandatory submission, and signed certification statements are incorporated in the

⁵ The AKRO Application and Forms webpage provides a fairly comprehensive catalog of administrative report forms, applications, and other data collection forms, including EDRs, that are administered by AKRO. <https://alaskafisheries.noaa.gov/fisheries-applications>.

⁶ Such administrative purposes include granting or renewing a particular permit or fishery allocation to an individual or a designated entity, assessment and collection of a specified fee from an individual or entity, and monitoring an individual entity’s conduct of regulated activities, identifying violations, and executing penalties. Primary applications of such administrative data systems may involve use of aggregate or statistical values as composite measurements over a population, such as determining the number of QS units represented in a pool of qualified IFQ applicants for use in distributing an annual allocation among individual IFQ permits, estimating the average per-unit value (price) of fishery resources extracted by fishery participants for use in assessing *ad valorem* fees and taxes, or monitoring the cumulative amount of withdrawals of an allocated fishery resource to determine when a catch limit is reached and a closure is ordered. Some elements of administrative records may be considered public information, such as public permit registries enumerating permit numbers, the names and addresses of permit holders, endorsements, and history of permit transfers and renewals. In general, however, most administrative records are confidential under federal and/or State of Alaska statutes and regulations.

program design for data quality control purposes specific to EDR data.⁷ Because these elements closely resemble features of NMFS and ADFG administrative reporting forms, however, EDR submitters may confuse the distinct purpose and permissible uses of EDR data collections with those associated with administrative reporting requirements, and have expectations for data quality requirements appropriate to the latter that may be excessive for the intended uses of EDR data.

In most cases of Council engagement in overseeing development, design or revision of administrative record systems or other data collections used in in-season management and/or the harvest specification process, the Council is substantially guided by the framework of quantitative metrics defined in National Standard 1 and by specific data quality needs identified by the stock assessment and in-season management processes. The institutional structures associated with harvest specifications (i.e., Crab and Groundfish Plans Teams and the SSC) and in-season management provide continuous mechanisms for improving the quality of information available to support the conservation management process. Although the specific institutional structures established by different Regional Fishery Management Councils (RFMCs) differ, the common framework of conservation management under NS1 (and international equivalents) is associated with large body of science and associated communities of practice that are endemic to fishery management and are densely populated within NMFS and other fishery management agencies. In contrast, institutional structures related to economic and social science information in decision-making are substantially thinner than for other science domains within fishery management. The National Standards provide much less guidance to RFMCs about the use of social science and economic information in defining and assessing management objectives and outcomes. Agency staff resources in economics and social science at regional offices and science centers are similarly limited, including at AFSC and AKRO. Economic and social science expertise available to the Council is generally concentrated in resource management subject areas, and does not generally include deep expertise in business survey design and data QA/QC that are particular to statistical agencies to a degree comparable to the depth of NMFS' scientific expertise in fields endemic to fishery management.

Over a 20-year history of Council engagement on economic data collection, agency and Council staff economists and data system managers have been contributors to temporary EDR-related workgroups initiated by the Council (as well as plan teams and scientific panels dealing with data quality issues in other domains). Over the successive iterations of the EDR development process, however, the Council's reliance during the initial phases on agency staff (independently or in collaboration with industry) to provide research and technical analysis to support its decision making has declined relative to industry input and other information sources.

3.2.2 Data quality principles and guidance

At the most general level, 'data quality' refers to the degree to which the attributes of a body of data fulfill requirements for use in a particular setting. Beyond this most general sense, operationalizing the concept of data quality is necessarily context-specific, depending on the setting in which a decision is to be informed through use of data and the nature of data proposed for use. There is no definitive framework of terms and definitions used in technical discussions of data quality. Such discussions often begin with acknowledgement that data quality is a complex, multidimensional concept, and that the vernacular understanding of the term "accuracy" is inadequate as an operational shorthand for the complex task of rigorously designing a data system or evaluating data for fitness-for-use in a particular situation.

Apart from abstract conceptual and methodological perspectives on the issue of data quality, as a federal agency, NMFS is subject to multiple tiers of statutory, regulatory, and administrative information quality

⁷ Due to the impracticality of representative sampling in the small population frames targeted by the EDR data collections, and prior history of Alaska fishery industry response to voluntary economic surveys.

requirements that apply to data and information⁸ that it collects and disseminates, each of which includes a set of definitions and standards that generally increase in specificity as they narrow in scope. At the highest statutory level, the federal Paperwork Reduction Act of 1995 (PRA)⁹ and Data Quality Act (DQA; 2001)¹⁰ vest the OMB with the principal responsibility for directing the promulgation of data quality policy and standards throughout federal agencies, and statutory provisions of the MSA relate to standards and mechanisms for ensuring the quality of information used by NMFS and RFMCs in fishery management. The following discussion provides a brief overview of regulatory guidelines and standards issued by OMB and NOAA implementing the respective statutes with respect to data quality and associated requirements associated with the EDR program.

OMB regulations implementing the PRA are intended to “reduce, minimize and control burdens and maximize the practical utility and public benefit of the information created, collected, disclosed, maintained, used, shared and disseminated by or for the Federal government” (5 CFR 1320). All collections of information¹¹ proposed to be conducted or sponsored by a federal agency must gain clearance from OMB subject to, among other items, completion of documentary and procedural requirements for public notice, solicitation and response to public comment, and review by OMB. The PRA review process¹² requires that an agency provide certification and supporting documentation (using the PRA Supporting Statement, OMB Form 83I) demonstrating that a proposed information collection meets specified criteria:

“Is necessary for the proper performance of the functions of the agency, including that the information to be collected will have practical utility; is not unnecessarily duplicative of information otherwise reasonably accessible to the agency; reduces to the extent practicable and appropriate the burden on persons who shall provide information to or for the agency[...]; is written using plain, coherent, and unambiguous terminology and is understandable to those who are to respond; is to be implemented in ways consistent and compatible, to the maximum extent practicable, with the existing reporting and recordkeeping practices of those who are to respond; indicates for each recordkeeping

⁸ The terms ‘data quality’ and ‘information quality’ are sometimes used interchangeably; in the following discussion, as explained in more detail below, “data quality” is used to focus on the narrower scope of issues involving the design and assessment of systems and methods for capturing and managing discrete items of information, i.e., data and information collection; “information quality” encompasses a broader range of topics, including information synthesis, interpretation, production, and dissemination.

⁹ <https://www.govinfo.gov/app/details/USCODE-2010-title44/USCODE-2010-title44-chap35-subchapI-sec3501>

¹⁰ Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554); although Section 515 of the Act is not officially titled, it is commonly referenced in official federal documents variously as the Data Quality Act or the Information Quality Act.

¹¹ Defined in 5 CFR 1320.3(c) as: “the obtaining, causing to be obtained, soliciting, or requiring the disclosure to an agency, third parties or the public of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, ten or more persons, whether such collection of information is mandatory, voluntary, or required to obtain or retain a benefit. ‘Collection of information’ includes any requirement or request for persons to obtain, maintain, retain, report, or publicly disclose information. As used in this Part, “collection of information” refers to the act of collecting or disclosing information, to the information to be collected or disclosed, to a plan and/or an instrument calling for the collection or disclosure of information, or any of these, as appropriate. [...] Any recordkeeping, reporting, or disclosure requirement contained in a rule of general applicability is deemed to involve ten or more persons.”

¹² NOAA’s “Paperwork Reduction Act Guidance” webpage provides extensive information about PRA clearance requirements, and official NOAA processes, procedures, schedules, and guidance to agency staff regarding PRA compliance (https://www.cio.noaa.gov/services_programs/praguide.html). NMFS Standard Operating Procedures for PRA compliance are posted online at https://www.cio.noaa.gov/itmanagement/pdfs/NMFSSOP_032409.pdf.

requirement the length of time persons are required to maintain the records specified; [...] has been developed by an office that has planned and allocated resources for the efficient and effective management and use of the information to be collected, including the processing of the information in a manner which shall enhance, where appropriate, the utility of the information to agencies and the public; uses effective and efficient statistical survey methodology appropriate to the purpose for which the information is to be collected; and to the maximum extent practicable, uses appropriate information technology to reduce burden and improve data quality, agency efficiency and responsiveness to the public.”(5 CFR 1320.9)

Stringent adherence to these criteria requires that an agency clearly demonstrate need for and the intended (or actual, in the case of renewal or clearance for ongoing collections) use of the collected information and balance the cost of the collection, in terms of financial and time burden required of respondents, against the quality of information obtained relative to its intended use. As defined in the rule, “practical utility” requires that:

“the actual, not merely the theoretical or potential, usefulness of information to or for an agency, taking into account its accuracy, validity, adequacy, and reliability, and the agency's ability to process the information it collects[...] in a useful and timely fashion. In determining whether information will have ‘practical utility’, OMB will take into account whether the agency demonstrates actual timely use for the information either to carry out its functions or make it available [...] for the use of persons who have an interest in entities or transactions over which the agency has jurisdiction. In the case of recordkeeping requirements or general purpose statistics [...], ‘practical utility’ means that actual uses can be demonstrated.” (5 CFR 1320.3(l))

The public input requirements of the PRA clearance process and the review criteria represented in the PRA Supporting Statement (Part A) apply to all proposed information collections, and are primarily concerned with quantifying, minimizing, and justifying the reporting burden and cost expended by the collection. As defined by OMB in Section 3.2.1 above, *statistical surveys* are a distinct category of information collections that require additional documentation and review standards that do not apply to fishery permit applications and recordkeeping and reporting requirements in regulations. PRA clearance for statistical surveys requires completion of PRA Supporting Statement -Part B, describing sampling design and procedures,¹³ survey design methods, testing procedures and results, statistical and analytical methods, and contact information for individuals consulted in the statistical design and the personnel responsible for conducting the collection and data analysis. This additional information specifically addresses data quality, and represents review criteria premised on the production of statistical estimates of key variables from collected data that are reliably representative of the population being surveyed. OMB has issued Standards and Guidelines for Statistical Surveys,¹⁴ describing review standards for PRA clearance and best practices guidance on seven topic areas (sections): 1) development of concepts, methods, and design; 2) collection of data; 3) processing and editing of data; 4) production of estimates and projections; 5) data analysis; 6) review procedures; and 7) dissemination of information products. Many of the standards described apply directly to aspects of data collections implemented according to Council recommendations, including EDR programs, particularly Sections 1, 2, 6 and 7. Two key

¹³ OMB has defined sample design to include a full population census, as employed in the EDR program.

¹⁴ 71 FR 55522; OMB Statistical Policy Directive Number 2 *Standards and Guidelines for Statistical Surveys* (2006).

https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/standards_stat_surveys.pdf

standards define design principles for aligning the objectives of the data collection, the design of survey instruments and procedures, and the quality of expected data and information output:

Survey Planning

Standard 1.1: Agencies initiating a new survey or major revision of an existing survey must develop a written plan that sets forth a justification, including: goals and objectives; potential users; the decisions the survey is designed to inform; key survey estimates; the precision required of the estimates (e.g., the size of differences that need to be detected); the tabulations and analytic results that will inform decisions and other uses; related and previous surveys; steps taken to prevent unnecessary duplication with other sources of information; when and how frequently users need the data; and the level of detail needed in tabulations, confidential microdata, and public-use data files.

Data Collection Methodology

Standard 2.3: Agencies must design and administer their data collection instruments and methods in a manner that achieves the best balance between maximizing data quality and controlling measurement error while minimizing respondent burden and cost.

In distinctly referencing measurement error and data quality, Standard 2.3 makes a distinction between the quality of measurement achieved by individual survey questions, and the broader data quality considerations addressed in Standard 1.1. That is, for a proposed statistical survey to comply with PRA requirements, the justification must describe data quality requirements broadly and in context, not in terms of measurement error and individual survey questions, but rather in terms of well-framed decision scenarios, how statistical values estimated from collected data are expected to inform such decisions, and the minimum precision of estimates necessary to effectively provide such information. Failure to address this broader conceptual framework in the justification risks failure in the PRA review process, regardless of whether the agency adequately demonstrates that measurement error is appropriately minimized.

Consistent with principles stated in PRA review guidelines, NOAA IQ guidelines acknowledge that “accuracy” is not an absolute metric, but must be assessed on the basis of whether information is “within an acceptable degree of imprecision or error appropriate to the particular kind of information at issue and otherwise meets commonly accepted scientific, financial, and statistical standards, as applicable;... original and supporting data that are within an acceptable degree of imprecision, or an analytic result that is within an acceptable degree of imprecision or error, are by definition within the agency standard and are therefore considered correct.”

National Standard 2 develops additional data quality guidance beyond NOAA IQ Guidelines that is particularly applicable to evaluation of EDR data as scientific information in developing and evaluating EDR data collections:

600.315 (a)(6): Criteria to consider when evaluating best scientific information are relevance, inclusiveness, objectivity, transparency and openness, timeliness, verification and validation, and peer review, as appropriate.

(i) Relevance. Scientific information should be pertinent to the current questions or issues under consideration and should be representative of the fishery being managed. ...

(ii) Inclusiveness. Three aspects of inclusiveness should be considered when developing and evaluating best scientific information: (A) The relevant range of scientific disciplines should be consulted to encompass the scope of potential impacts of the management decision. (B) Alternative scientific points of view should be acknowledged and addressed

openly when there is a diversity of scientific thought. (C) Relevant local and traditional knowledge (e.g., fishermen's empirical knowledge about the behavior and distribution of fish stocks) should be obtained, where appropriate, and considered when evaluating the BSIA.

(iii) Objectivity. Scientific information should be accurate, with a known degree of precision, without addressable bias, and presented in an accurate, clear, complete, and balanced manner. Scientific processes should be free of undue nonscientific influences and considerations.

(iv) Transparency and openness. (A) The Magnuson-Stevens Act provides broad public and stakeholder access to the fishery conservation and management process, including access to the scientific information upon which the process and management measures are based. ...(B) Scientific information products should describe data collection methods, report sources of uncertainty or statistical error, and acknowledge other data limitations. Such products should explain any decisions to exclude data from analysis. ...

(v) Timeliness. ... Data collection methods are expected to be subjected to appropriate review before providing data used to inform management decisions. ...

(vi) Verification and validation. Methods used to produce scientific information should be verified and validated to the extent possible. (A) Verification means that the data and procedures used to produce the scientific information are documented in sufficient detail to allow reproduction of the analysis by others with an acceptable degree of precision. External reviewers of scientific information require this level of documentation to conduct a thorough review. (B) Validation refers to the testing of analytical methods to ensure that they perform as intended.

4 Description and History of Economic Data Collection

4.1 Overview of national fisheries economic data collections

Evaluation of the economic effects of fishery management decisions emphasizes analysis of how regulatory programs affect net benefits to society as well as the profitability of fishing firms, which requires information on both benefits and costs. Additionally, Councils and NMFS have developed and adopted measures of economic performance to monitor whether fishery management programs are meeting management objectives. These economic performance measures may include: costs, earnings, and profitability (net revenue); productivity change and economic efficiency; capacity; employment, economic stability; net benefits to society; distribution of economic net benefits; and market power or concentration.

To meet these needs, NMFS' Office of Science and Technology has invested in cost data collection of commercial fisheries by providing dedicated funding to regional Science Centers. Funding of cost data collection in catch share fisheries has been further enhanced by the NMFS Office of Sustainable Fisheries and through cost recovery. This programmatic support has led to an expansion of systematic cost data collections in the U.S., from five collections in 2002 to 26 in 2018. Each of these data collections has been tailored to suit regional Council requirements and complement and take advantage of other region-specific fishery-dependent or fishery-independent data collection programs.

NMFS has a long history of economic studies of costs and returns in U.S. domestic commercial fisheries. Most early cost and earnings studies were conducted to evaluate the economic performance of one or more fisheries due to a resource change or external shock having an adverse effect on profitability or competitiveness. While such surveys provided useful economic data at the time, they were done without dedicated funding and so could not be replicated. This inhibited the ability to conduct economic assessments of management changes over time.

Beginning in the 2001, NMFS began a strategic initiative to provide funding for regional economics programs to take a systematic programmatic approach to cost data collection. These efforts led to a gradual expansion of data collection programs across regions, which are chronicled in Table 1. By 2002, continuous data collection was in place in the Northeast, South Atlantic, and Highly Migratory Species (HMS) fisheries, including the South Atlantic coastal logbook reporting form, the Agency's first mandatory cost data collection program. Similar data collection programs were implemented in the Hawaii longline fishery in 2004, and in 2005 continuous annual data collection programs were implemented in fisheries of the Gulf of Mexico and the BSAI crab fishery. Systematic rotation of cost surveys for key fisheries in the Northwest was established by 2006. With the exception of 2012, at least one new data collection program was added in each year through 2013. The most recent new data collection program began in 2015 when the Gulf of Alaska Groundfish Trawl data collection was established.

Table 2 displays the 19 data collection programs, which include all 26 data collections reference above, implemented and managed by economists in each of NMFS' six Science Centers through 2018. The Northwest Groundfish Trawl Rationalization Economic Data Collection and Alaska Economic Data Reports include multiple fleets or fisheries but share common data collection methods and protocols. For this reason, each of the two are treated as a single data collection program within their region. Each of the programs within the Alaska Economic Data Reports will be discussed in detail below in Section 4.2.3.

Table 1 Summary of NOAA Fisheries Cost Data Collections 2000 to 2018 (cells shaded in green indicate data collection events)

Data Collection Program	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
AK BSAI Crab ³																			
AK Amendment 80 ³																			
AK Amendment 91 Chinook Salmon ³																			
AK Gulf of Alaska Trawl ³																			
NW Groundfish Trawl Rationalization Economic Data Collection ¹																			
NW Limited Entry Groundfish Trawl ²																			
NW Limited Entry Groundfish Fixed Gear																			
NW Open Access Groundfish, Salmon, Crab, and Shrimp Cost and Earnings																			
PI Cost Data Collection of the Hawaii Longline Fishery																			
PI Cost Data Collection of the American Samoa Longline Fishery																			
PI Cost Data Collection Program in Three Territorial Areas																			
SW West Coast Albacore Troll and Pole-and-Line Fishery																			
SW West Coast Commercial Swordfish Fishery																			
SE Trip-level Economic Survey of South Atlantic Coastal Fisheries																			
SE Annual Economic Survey of South Atlantic Coastal Fisheries																			
SE Trip-level Economic Survey of Gulf of Mexico Coastal Fisheries																			
SE Annual Economic Survey of Gulf of Mexico Coastal Fisheries																			
SE Economic Survey of Federal Gulf of Mexico Shrimp																			
SE Economic Survey of Federal South Atlantic Shrimp																			
SE Economic Survey of Federal South Atlantic Golden Crab																			
SE Economic Survey of Wreckfish ITQ Holders																			
US Caribbean Small-scale Fisheries ⁴																			
NE Northeast Trip Costs Survey																			
NE Northeast Fixed Costs Survey																			
Atlantic HMS Trip Cost Survey ⁵																			
Atlantic HMS Annual Cost Survey ⁵																			

¹ Includes data collection for catcher vessel, catcher-processor, mothership, and first receiver sectors of the Northwest Groundfish Trawl Rationalization program.

² The limited entry groundfish trawl data collection transitioned to the mandatory Groundfish Trawl Rationalization Economic Data Collection program in 2010.

³ Part of Alaska Economic Data Report Program including BSAI Crab, Amendment 80, Amendment 91 Chinook Salmon, and the GOA Trawl EDR.

⁴ Includes Puerto Rico and U.S. Virgin Islands (St. Thomas, St. Croix, and St. John).

⁵ Voluntary reporting of Atlantic HMS cost data collection was initiated in 1996 and became mandatory in 2003.

Table 2 Meta-Data Summary of NOAA Fisheries Economics Program Current Cost Data Collection Programs (2018 or most recent year)

Program Name	Requirement	Sampling Regime	Unit of Observation	Survey Vehicle	Frequency
	M = mandatory, V = voluntary	S = sample, C = census	T = trip, A = annual	M = mail, W = web, T = telephone, L = logbook, PI = personal interview, OB = observer	Y = yearly, O = ongoing, 3Y = every 3 years, 5Y = every 5 years 5-7Y = 5 to 7 years
AK Alaska Economic Data Report ¹	M	C	A	W	Y
NW Groundfish Trawl Rationalization Economic Data Collection Program ²	M	C	A	M,W	Y
NW Open Access Groundfish, Salmon, Crab, and Shrimp Cost and Earnings	V	C	A	T,PI	3Y
NW Limited Entry Groundfish Fixed Gear	V	C	A	T,PI	3Y
PI Cost Data Collection Program of the Hawaii Longline Fishery	V	S	T	OB	O
PI Cost Data Collection Program of the American Samoa Longline Fishery	V	S	T	PI,OB	O
PI Cost Data Collection Program in Three Territorial Areas	V	S	T	PI	O
SW West Coast Albacore Troll and Pole-and-Line Fishery	V	S	A	M,PI	5Y
SW West Coast Commercial Swordfish Fishery	V	S	A	M	5Y
SE Trip-level Economic Survey of Southeast Coastal Fisheries	M	S	T	L	O
SE Annual Economic Survey of Southeast Coastal Fisheries	M	S	A	M	Y
SE Economic Survey of Federal Gulf and Atlantic Shrimp	M	S	A	M	Y
SE Economic Survey of Federal South Atlantic Golden Crab	V	C	A	M	5Y
SE Economic Survey of Wreckfish Individual Transferable Quota Holders	V	C	A	M	5Y
US Caribbean Small-scale Fisheries	V	S	T	T,PI	5-7Y
NE Northeast Trip Costs Survey	V	S	T	OB	O
NE Northeast Fixed Costs Survey	V	S	A	M,W	3Y
Atlantic HMS Trip Cost Survey	M	S	T	L	O
Atlantic HMS Annual Cost Survey	M	S	A	M	Y

¹ Alaska EDR program covers data collection programs for BSAI Crab, Amendment 80, Amendment 91 Chinook Salmon, and Gulf of Alaska Trawl.

² Includes data collection for catcher vessel, catcher-processor, mothership, and first receiver sectors of the Northwest Groundfish Trawl Rationalization program.

Figure 2 breaks down the evolution of commercial fisheries cost data collections across the U.S., by those collecting fixed costs and those collecting operating costs in each region. What is clear from Figure 2 is that despite the attention paid to collecting better economic data in the North Pacific, other regions have been more successful in implementing economic data collection programs over this period. One program that benefitted substantially from learning from the missteps in the original Crab EDR and is successfully implementing an economic data collection for a similar fleet of vessels is Northwest Groundfish Trawl Rationalization Economic Data Collection (EDC) Program, which is summarized in the following section.

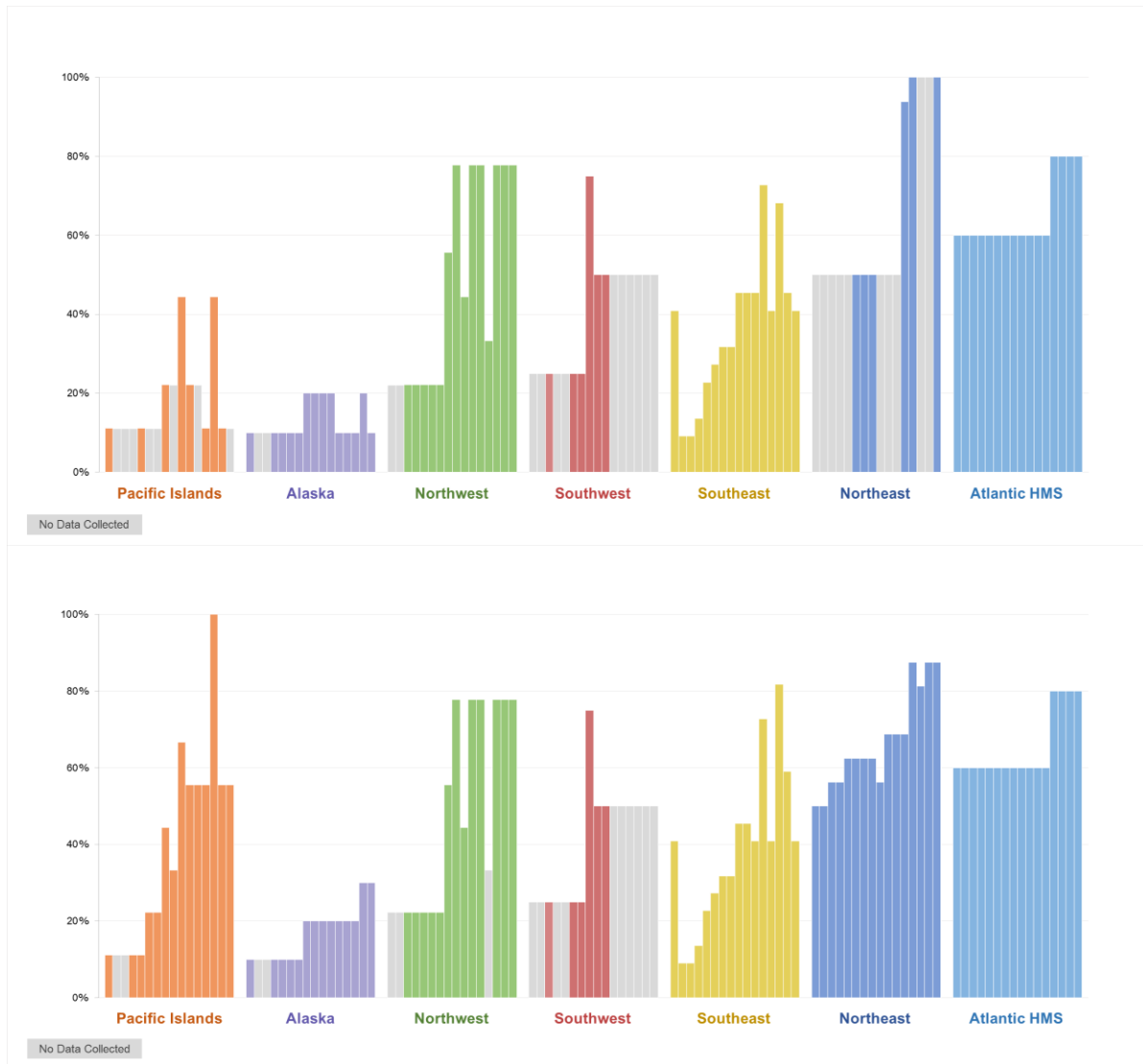


Figure 2 Percent of U.S. Fisheries with Fishing Vessel Cost Data (2001-2016)

Source: Slide 11 from Drew Kitts presentation for the NMFS Office of Science and Technology Economics and Human Dimensions Science Review, September 2017. Available at: https://www.st.nmfs.noaa.gov/Assets/science_program/econ-hd-program-review/commercial_fisheries_kitts_FINAL.pdf

4.1.1 Summary of the Northwest Groundfish Trawl Rationalization Economic Data Collection Program

The U.S. West Coast groundfish fishery takes place off the coasts of Washington, Oregon, and California, and targets more than 90 species of fish, harvested both commercially and recreationally. The commercial fishery has four components: limited entry with a trawl endorsement, limited entry with a fixed gear endorsement, open access, and tribal. In January 2011, the West Coast Limited Entry Groundfish Trawl fishery transitioned to the West Coast Groundfish Trawl Catch Share Program. The catch share program consists of cooperatives for the at-sea mothership (including catcher vessels and motherships) and catcher-processor fleets, and an individual fishing quota (IFQ) program for the shore-based trawl fleet.

The economic benefits of the West Coast groundfish trawl fishery and the distribution of these benefits were expected to change under the West Coast groundfish trawl catch share program. To monitor these changes, the Pacific Fishery Management Council (PFMC) proposed the implementation of the mandatory collection of economic data. Using data collected from industry participants—including information on operating costs, revenues, and vessel and processing facility characteristics—the EDC Program monitors whether some of the goals of the catch share program have been met. The EDC program is also intended to help meet the MSA requirement to determine whether a catch share program is meeting its goals, and whether any modifications of the program are necessary to meet those goals.

Economic performance measures include: costs, earnings, and profitability (net revenue); economic efficiency; capacity; economic stability; net benefits to society; distribution of economic net benefits; product quality; functioning of the quota market; incentives to reduce bycatch; market power; and spillover effects in other fisheries. Some of these measures are presented in regularly-published reports produced using EDC data, while others will require more specific and involved analysis.

The EDC Program is a mandatory component of the West Coast Groundfish Trawl Catch Share Program, collecting information annually from all (census) catch share participants: catcher-processors, catcher vessels, motherships, first receivers, and shore-based processors. Catcher vessels and catcher-processors are required to fill out the survey if they had a Limited Entry Trawl permit on their vessel at any time during the calendar year. Motherships with a mothership permit on their vessel at any time during the calendar year must fill out the survey, as must any first receiver or shore-based processor that held a first-receiver license at any point during the preceding year.

Separate survey forms are used for catcher vessels, catcher processors, motherships, and first-receivers/shore-based processors. Each survey form is tailored to the circumstances appropriate to each of these categories and are mailed each year to collect data covering information for the prior year. Participants in the EDC Program may also complete their forms via an online web-form. EDC survey forms and analytical reports are available on the NWFSC EDC webpage.¹⁵

4.2 Review of North Pacific economic data collections

4.2.1 Non-EDR data sources of fisheries economic data

The requirements for participants in the North Pacific groundfish, halibut, and crab fisheries to submit information about their fishing and processing activities are organized into about thirty different “information collections.” These collections include fishermen, vessel, processor, and cooperative permit applications; quota transfer applications; vessel and processor logbooks; data collected by observers and through electronic monitoring (EM) and other equipment and catch monitoring requirements; landing and production reports; annual reports; cost recovery submissions; and economic data reports. While the EDR

¹⁵ More information about the EDC Program is available at <https://www.nwfsc.noaa.gov/research/divisions/fram/economic/overview.cfm>.

requirements are focused specifically on the collection of economic and business information from individual fishermen and processors, almost all of the other data collections also provide information that is economic in nature and essential to analyzing the economic impacts of fishery conservation and management actions.

Some of the most important economic information collected through non-EDR sources is information about participants in the fisheries; the species, product form, weight, and ex-vessel or first wholesale value of the catch and production; and the location of landings and production. This information is provided by vessel landing reports (“fish tickets”), production reports, observer and electronic monitoring data; and the State of Alaska’s Commercial Operator’s Annual Report. Information collected through vessel logbooks provides detailed information about the timing and location of fishing, gear used, catch and discards, and number of crew onboard the vessel each fishing day. This information is used to describe the existing fisheries and participants, and to project, either qualitatively or quantitatively, the changes in the amount, location, and timing of fishing and processing that may occur as a result of a change in a fishery or a proposed fishery conservation or management action. Based on those projected changes, analysts address qualitatively and, where possible quantitatively, the potential benefits and costs and distributive impacts of a proposed action or alternative on individuals, entities, and communities, and the “net benefits to the nation.”

4.2.2 Overview of current EDR program framework

To enhance the availability of social and economic information needed to inform its oversight of catch share management in North Pacific fisheries, the Council has overseen the development, and implementation by NMFS, of four mandatory Economic Data Report data collections to date. At early stages of developing FMP amendments for BSAI Crab Rationalization (70 FR 10174) and BSAI Amendment 80 (72 FR 52668) programs, the Council included mandatory annual reporting of comprehensive cost, earnings, production, and employment data by program participants as an element of the program design described in the respective FMP amendments. Following implementation of Chinook salmon bycatch management measures in the AFA pollock fishery under Amendment 91 to the Bering Sea groundfish FMP, the Council designed an EDR specifically intended to inform analyses of the cost and effectiveness of the A91 bycatch avoidance measures by collecting a targeted set of variables from vessel owners and other AFA program participants (77 FR 5389). Following an extensive review of Crab EDR implementation, the Council took final action on Amendment 42 to the Crab FMP (78 FR 36122), substantially revising crab EDR reporting requirements. Most recently, the Council recommended the implementation of an EDR to collect cost and employment data from vessels and processors active in the Gulf of Alaska (GOA) groundfish trawl fishery (79 FR 71313); although Council action on GOA rationalization was suspended in December 2016, the Gulf of Alaska Trawl Economic Data Report represents an effort to improve the quality of information describing baseline economic conditions achieved in implementation of earlier catch share programs.

As described in more detail in Section 4.2.3, each of the EDRs was developed through the Council’s FMP and regulatory development and review process, beginning with the specification of purpose and needs for the data collection followed by the development, analysis, and selection of a preferred alternative. In reaching final action on preferred alternatives for each new or revised EDR, the Council specified submission requirements, administrative procedures, and enforcement mechanisms for the data collections, and in all cases included detailed descriptions of the information content of EDR forms in their regulatory recommendations to NMFS.¹⁶ In EDR development and ongoing oversight, the Council

¹⁶ Detailed specifications of the content of EDR forms by the Council have been alternately described in the text of final action motions, by reference to draft EDR forms in addenda, and/or by reference to detailed descriptions in regulatory review documents. Per Council recommendations, final rules implementing the Crab Rationalization Program and Amendment 80 included detailed specifications of EDR form content describing each data element in

has relied on committees and/or workgroups of varying industry, agency, and/or scientific composition and purpose, and has varied in its responsiveness to AP and SSC review recommendations. Notwithstanding differences in EDR form content and specific elements of implementing rules (e.g., target populations) between the four EDRs, the general structure of the EDR program is largely consistent with that of the original Crab EDR as developed by the Council and implemented by NMFS. Each of the four EDRs employs mandatory annual censuses of the target populations of designated reporting entities participating in the associated fishery management programs,¹⁷ and all include provisions for third-party data verification audits in the implementing rules.

Within the recommended framework developed by the Council, the EDR program is managed jointly by AKRO and AFSC (primarily by the ESSR program), with Pacific States Marine Fisheries Commission (PSMFC) acting as NMFS' Data Collection Agent (DCA).¹⁸ In conjunction with issuance of implementing regulations for EDRs, AKRO is required to gain PRA clearance for EDR forms from OMB as described in Section 3.2.2 above, which must be renewed every three years. AFSC economists, in collaboration with AKRO and Council staff, develop and refine draft survey questionnaires consistent with Council specifications, coordinate and conduct outreach to industry entities to pretest and improve survey wording and identify potential data quality concerns with individual data items for referral to the Council where substantive changes may be required. Finalized draft EDR forms are submitted to the Council before submission to OMB for PRA review. AFSC assists with preparing documentation for PRA review, particularly in developing and documenting statistical methods required to complete Part B of the PRA Supporting Statement and in preparing responses to public comment received by OMB.

As the DCA for the EDR program, PSMFC provides primary administrative support for collection and database management for all four EDR collections. AFSC and PSMFC collaborate on development and maintenance of workplans for implementation of new or revised EDRs, including development of Scope of Work documents and RFP procedures for soliciting and selecting bids for required IT application development and Data Verification Audit work subcontracted by PSMFC, with AFSC monitoring implementation and overseeing quality control of PSMFCs administrative process and communication with submitters. PSMFC hosts and maintains webpages for each of the EDRs that provide access to current (reporting year and OMB expiration dates) versions of EDR forms in pdf format, general submission instructions and background information, and access to the EDR web portal.¹⁹ Annually, 3-4 months in advance of EDR form submission deadlines, PSMFC's Alaska Fisheries Information Network (AKFIN) queries eLandings and permit registry databases to develop contact lists for entities subject to submission requirements for each EDR form according to the implementing rules, and confirms the list with AFSC. Subject entities and individuals are notified by PSMFC via certified mail 60 days prior to the respective submission deadline, with instructions for online EDR submission or submission by mail, and

the respective forms. In the final action motion on the A91 EDR in December, 2009, the Council recommended that NMFS develop the implementing rule in a manner that provides greater flexibility to revise survey forms as needed (subject to Council oversight), and subsequent rules implementing new or revised EDRs (i.e., all EDR forms currently in use) have not specified survey form content.

¹⁷ All EDR forms collect data for the previous calendar year of operations (i.e., forms reporting information pertaining to 2018 calendar-year operations will be collected during 2019).

¹⁸ Defined in 50 CFR 679.2 and 50 CFR 680.2 as "*Data collection agent (DCA) means the entity selected by the Regional Administrator to distribute an EDR to a person required to complete it, to receive the completed EDR, to review and verify the accuracy of the data in the EDR, and to provide those data to authorized recipients.*" As described further in sections 4.2.3.2 and 4.2.3.6, the Council specified enhanced confidential data protections for the Crab EDR (50 CFR 680.6(a)(2)) and the GOA Trawl EDR (50 CFR 679.110(b)(1)), requiring that associated EDR forms be submitted directly to the DCA. Although applicable rules for other EDR forms do not require NMFS to administer the data collection through a third-party DCA, it has proven more practical to employ PSMFC to perform applicable DCA functions for the EDR program as a whole.

¹⁹ PSMFCs EDR Program webpage: <http://www.psmfc.org/program/prog-2?pid=17>.

contacts for obtaining support and information from PSMFC and AFSC staff.²⁰ EDR pdf files posted online are updated for the current reporting year, and the webform implementation is updated and reviewed for possible improvements to streamline the submission process and incorporate automated error checking and primary data validation procedures, with testing completed prior to distribution of EDR notices.

All nine EDR forms include a certification section which serves two functions: specifying conditions under which the individual noticed by PSMFC is exempt from completing the data portion of the EDR form,²¹ and a statement requiring the submitter to attest, by signature that “I certify under penalty of perjury that I have reviewed all the information in this report and that it is true and complete to the best of my knowledge”. With the exception of the A91 EDR (see Section 4.2.3.5 below), EDR forms may be submitted by mail or email using the posted pdf versions, but all EDR submitters are encouraged to use the secure online EDR web portal hosted by PSMFC, with customized web applications for each EDR form and submitter type. During the EDR collection window (i.e, 60 days prior to submission deadlines, with additional time needed for late submitters granted deadline extensions), PSMFC actively monitors submissions, inputs data from forms submitted by mail, provides daily (Monday-Friday) email and phone support to answer submitter questions and resolve webform problems. Upon receipt of certified EDR forms (webform submission is finalized by a digital signature), PSMFC reviews the results of automated data validation logs and contacts submitters to confirm or correct identified errors. Noticed entities that do not complete the certification and submission of required forms by the deadline are contacted by PSMFC during the next business day to determine if reasonable extensions are warranted, and any noncompliance as of 14 days after the submission deadline is referred to AFSC and/or AKRO for consideration of additional extensions or referral to NMFS OLE as appropriate. Noncompliance with applicable EDR reporting requirements may result in enforcement action by OLE, including fines, and could potentially result in permit sanctions. In addition, under several provisions in 50 CFR 680, timely submission of the annual Crab EDR form submission to the DCA is required as a condition of an application for issuance of an annual permit issued under the CR program (e.g., annual Crab IFQ/Individual Processing Quota (IPQ) allocation permits, RCR permits, Hired Master permits). However, since initial implementation, the annual submission deadline for Crab EDRs has shifted from May 1 to July 31, which is too late to allow AKRO to confirm EDR compliance as a condition of IFQ allocations.

Following receipt of all final, certified EDR forms, completion of primary data validation, the preproduction (stage) version of the EDR data records are integrated with catch accounting, fish tickets, observer data and other sources and analyzed for secondary validation by AFSC and AKFIN. Reported data values and various pro-rata indices are visually reviewed for outliers and anomalies (e.g., significant deviations of reported values from those reported by the same entity in previous years). Potential data errors identified in secondary validation are reviewed for follow up with submitters by PSMFC or for third party verification audit by the CPA firms contracted by PSMFC. Procedures and results of data verification audits are described in Section 5 below. Data corrections confirmed with submitters by PSMFC and/or auditors are logged and entered in place of error values in the database, and loaded to the production version of the dataset and made available to authorized analysts by AKFIN.

²⁰ PSMFC EDR Program Manager Geana Tyler and AFSC Economist Brian Garber-Yonts have been the designated staff contacts for the EDR program since 2006.

²¹ Exemption conditions are, in general, those in which the owner of a vessel or plant did not participate in the activities to which the data portion of the form pertains, because either the vessel/plant was idle during the fishery season, or because the vessel/plant was sold prior to the season or was operated during the season by a lessee. In the event that an entity is noticed by PSMFC of a requirement to submit an EDR but meets one of the specified exemptions, they are only required to indicate the exemption, sign the certification statement, and complete a “certification-only” submission. When generating the annual contact list for EDR notices, program staff make an effort to minimize notification of exempt submitters where possible.

EDR data records are considered confidential information and are protected from public disclosure consistent with MSA Section 402(b), 50 CFR 600.402-425, and NOAA Administrative Order 216-100. Access to confidential EDR records is limited to agency personnel, contractors, and Council staff that are authorized to access confidential fishery data and have a signed nondisclosure agreement on file with AKRO and PSMFC.

In addition to data confidentiality requirements that apply to other categories of confidential fisheries data, the Council has specified additional protocols for EDR data. As noted above, implementing rules for Crab and GOA Trawl EDRs require that the data collection be conducted by a DCA, and limits release of unaggregated EDR data in blind format only.²² AKFIN staff maintain analytical versions of crab and GOA Trawl EDR data tables, integrated with ancillary data and with identifiers replaced with anonymous record IDs for use by authorized analysts; blind data protocols are not applied to A80 and A91 EDR data. Due to concerns regarding the sensitivity of proprietary cost data collected in EDRs, the Council's requested AFSC to develop enhanced confidential data protocols for EDR data following the initial collection of annual Crab EDRs in 2006; based on a review of OMB guidance and best practices for nondisclosure control and interagency consultation, it was determined that a minimum aggregation standard of 5 data records would be employed for public disclosure of aggregate statistics reporting EDR results (compared to a minimum of three records required for all other federal and state sources of North Pacific fishery data). The same "rule of 5" standard has subsequently been applied by PSMFC/AKFIN and AFSC to all public release of statistics derived from EDR Program data. In addition, AKFIN and AFSC follow federal guidelines for primary and secondary cell suppression described in FCSM (2005).

4.2.3 Current EDR Data Collections

The following subsections provide summary descriptions of each of the four current EDR data collections, including the initial year of implementation, target entity populations and conditions requiring submission of the associated EDR forms, and a summary description of the data elements collected in the respective forms. This is followed by a summary overview of EDR variables collected in the EDR Program as a whole.

4.2.3.1 Crab rationalization program EDR

The Council set forth the purpose and need for the Crab EDR in its June, 2002 motion as follows:

"A mandatory data collection program shall be developed and implemented as part of the crab rationalization program and continued through the life of the program. Cost, revenue, ownership and employment data will be collected on a periodic basis (based on scientific requirements) to provide the information necessary to study the impacts of the crab rationalization program as well as collecting data that could be used to analyze the economic and social impacts of future FMP amendments on industry, regions, and localities. This data collection effort is also required to fulfill the Council problem statement requiring a crab rationalization program that would achieve "equity between the harvesting and processing sectors" and to monitor the "...economic stability for harvesters, processors and coastal communities. Both statutory and regulatory language shall be developed to ensure the confidentiality of these data.

Any mandatory data collection program shall include:

²² Defined in 679.2 and 680.2 as "Blind data means any data collected from an economic data report by the data collection agent that are subsequently amended by removing personal identifiers, including, but not limited to social security numbers, crew permit numbers, names and addresses, Federal fisheries permit numbers, Federal processor permit numbers, Federal tax identification numbers, and State of Alaska vessel registration and permit numbers, and by adding in their place a nonspecific identifier."

A comprehensive discussion of the enforcement of such a program, including enforcement actions that would be taken if inaccuracies in the data are found. The intent of this action would be to ensure that accurate data are collected without being overly burdensome on industry for unintended errors.”

The Crab EDR²³ was implemented concurrent with the Crab Rationalization Program under Amendments 18 and 19 of the BSAI Crab FMP (70 FR 10174), effective April 1, 2005. The rule requiring EDR submission was codified in 50 CFR 680.6, which retroactively required affected entities to submit “historical” EDR forms for 1998, 2001, and 2004 calendar year operations by June 1, 2005, and to submit an annual EDR form for calendar year 2005 and thereafter by a deadline of May 1 of the following year. The Council took final action on Amendment 42 in December, 2012, revising Crab EDR reporting requirements, and NMFS published the final rule (78 FR 36122), effective July 17, 2013. The amended rule extended the annual submission deadline to July 31. This section focuses on a description of the current Crab EDR data collection, with Section 4.3 below providing a more detailed discussion of the Council and NMFS process for developing and implementing the Crab EDR prior to 2013. However, as each of the revised EDR forms maintained a subset of the original data elements, the majority of data elements in the current Crab EDR have been collected continuously (with modifications where noted) since the baseline historical EDRs were submitted in 2005.

Under 680.6, the reporting requirements for the Crab EDR apply to a) owners and leaseholders of vessels and catcher/processors with landings of BSAI program crab (including CDQ allocation crab), and b) owners and leaseholders of shore-based processing plants, and Registered Crab Receivers (RCRs), who purchase and/or process landed BSAI crab during a calendar year.²⁴ For both groups, the annual submission requirement is conditional on active participation in harvest, purchase, and/or processing (including providing custom processing) of CR crab.

Under the CR program, both harvest quota (QS/IFQ) and processing quota (PQS/IPQ) are held by qualified corporate entities or harvest cooperatives that are typically distinct from the entities that operate the crab vessels and from the processors that are subject to the EDR requirement. The Crab EDR is comprised of three EDR forms developed for the respective sectors: the Crab CV EDR, Crab Processor EDR, and the Crab C/P EDR.²⁵ The CV and processor forms collect distinct sets of data elements, with the CP form comprised of a combination of all data elements collected in the catcher vessel form and applicable elements from the processor form. Data elements collected in each of the Crab EDR forms are the following:

Crab CVs and CPs

- Estimated market value and replacement value of vessel;
- Crab landings volume (pounds) and ex-vessel revenue, by CR fishery and quota type;
- Annual total fuel cost and gallons;
- Fuel gallons consumed, by CR fishery;
- Provisions costs, by CR fishery;
- Bait costs, by CR fishery;
- Quota lease costs, by CR fishery and quota type

²³ PSMFC’s Crab EDR webpage provides access to EDR forms, submitter instructions, and validation audit reports: http://www.psmfc.org/alaska_crab/.

²⁴ The EDR requirement for RCRs was added in the Amendment 42 EDR revision, beginning 2012 calendar year. Prior to 2012, RCRs that held crab IPQ and purchased landed crab for custom processing, and did not operate a plant, were not required to submit an annual EDR.

²⁵ The forms are formally labeled in 680.6(b) as the Annual Crab Catcher Vessel Crab EDR, Annual stationary floating crab processor and shoreside crab processor EDR, and the Annual catcher/processor crab EDR.

- Total labor payments to crew (total of final settlement payments), by CR fishery;
- Total labor payments to captains (total of final settlement payments), by CR fishery;
- Annual total direct labor payments to crew (inclusive of crab settlements);
- Health Insurance and Retirement Benefits provided to crew; (Y/N), by fishing crew/captains;
- Commercial crew license number or CFEC gear operator permit number, by individual crew member that worked on vessel during CR crab season; and
- Vessel used for tendering during calendar year, (Y/N)

Crab processors, RCRs, and CPs

- Estimated market value and Borough assessed value (shore plants) or Replacement value (floating processors);
- Crab product sales to affiliated/unaffiliated buyers, volume (pounds) and first wholesale revenue, by crab species, product code, process code, and box size (large/small);
- Custom processing services provided, revenue, raw pounds, and finished pounds, by CR fishery, product code, and process code;
- Crab purchased from landing vessels, pounds and cost, by CR fishery and quota type;
- IPQ leased, pounds and cost, by CR fishery and quota type; and
- Custom processing services purchased, raw pounds, finished pounds, and processing fees paid, by CR fishery, product code, and process code;

Crab processors and RCRs

- Processing labor gross wages and paid hours, by CR fishery (CPs report processing crew labor cost combined with fishing crew);
- Processing employee count, by location of residence, CR Crab total and Annual total
- Non-processing employment (annual total number employed), and total annual gross wages and salaries

4.2.3.2 Amendment 80 economic data EDR

The Council set forth the purpose and need for the Amendment 80 Non-AFA Trawl C/P EDR (A80 ER) in its June 10, 2006 motion as follows:

“The purpose of the data collection program is to understand the economic effects of the Amendment 80 program on vessels or entities regulated by this action, and to inform future management actions. The data is needed to assess whether Amendment 80 addresses some goals in the problem statement to mitigate, to some degree, the costs associated with bycatch reduction. Data will be used by Council and agency staff, recognizing that confidentiality is of extreme importance.

Economic data collected under this program include employment data by vessel collected to determine the labor amounts and costs for the sector. In addition, revenue and cost data by vessel will be collected to evaluate trends in returns to the sector that may be compared with elements of the Amendment 80 program, such as bycatch reduction measures”

The A80 EDR²⁶ was implemented in regulation at 50 CFR 679.94, as part of the Amendment 80 management program, published by NMFS on September 14, 2007 (72 FR 52668), effective January 20, 2008. The initial A80 EDR submissions were due June 1, 2009 reporting data for the 2008 calendar year.

²⁶ PSMFC’s Amendment 80 EDR webpage provides access to EDR forms, submitter instructions, and validation audit reports: <http://www.psmfc.org/am80edr/>.

The A80 EDR reporting requirement under the original rule applied to all Amendment 80 Quota Share (QS) permit holders, with permit holders who actively operated an A80 vessel required to complete and the entire EDR form, and QS permit holders who did not operate a vessel required to complete portions of the form pertaining to QS permit sale and/or lease costs and revenues.

NMFS' publication of the rule implementing the GOA Trawl EDR program in 2014 included amendments to 679.94, redesignating the A80 EDR as the "Annual Trawl Catcher/Processor Economic Data Report" and added additional reporting elements to the form; the rule also extended the requirement to complete the all portions of the EDR form to owners/leaseholders of any vessel named on a LLP groundfish license authorizing a C/P using trawl gear to harvest and process LLP groundfish species in the GOA.²⁷ The association between the GOA Trawl (CV and Processor) EDR and Annual Trawl C/P EDRs has resulted in confusion. For the sake of clarity, the EDR currently specified under 50 CFR 679.94 is referenced in this discussion paper as the A80 EDR, and that under 679(a)(1) and (2) as the GOA Trawl EDR; any relevant distinctions and/or overlaps are described as needed.

The A80 EDR form has been submitted annually by A80 QS holders since 2008, consistently collecting comprehensive, quantitative data for the following data elements:

- Vessel characteristics and registry details (home port, tonnage, fuel capacity, shaft horsepower, year built);
- Survey value, date, and included assets;
- Fuel consumption rate (gal/hour), and annual total gallons consumed, by operating activity;
- Freezer storage and throughput capacity, and processing line throughput capacity, by A80 and GOA groundfish species and product code;
- Fishery product sales volume and revenue, LLP sale revenue, quota lease revenue and pounds, and other vessel operations income;
- Annual total capital expenditure, grouped by fishing gear, processing equipment, other equipment, and other vessel capital;
- Non-labor vessel operating expenses, annual totals grouped by: fuel; lubrication; provisions, repair and maintenance, vessel/equipment lease costs, fishing gear purchases, leases and repair costs; freight and storage costs for product sales; other freight and storage; materials; observer fees and reporting/monitoring costs; cooperative fees, general administrative/management overhead, vessel insurance; fisheries landing taxes, total cost and volume of raw fish purchases; and QS lease quantity and costs by A80 species;
- Gross labor costs, grouped by: deck crew, processing crew, and all other on-board crew
- Average number of crew onboard and total crew members employed in year, grouped by: deck crew, processing crew, and all other on-board crew; and
- Use of share-system for crew compensation (y/n), by processing/non-processing crew

Beginning in 2016, the revised Annual Trawl CP EDR added collection of individual commercial crew license or CFEC gear operator permit numbers for all individual crew members that worked on the vessel during the calendar year.

4.2.3.3 Amendment 91 Chinook salmon EDR

The Council set forth the purpose and need for the Amendment 91 Chinook salmon EDR (A91 EDR) in its December, 2009 motion as follows:

²⁷ As a matter of public record, the addition of the EDR requirement to GOA Trawl CPs as defined in the 2014 rule effectively added the owner of one CP to the population of entities subject to the A80 EDR requirement.

“In April 2009 the Council approved Amendment 91 to the BSAI groundfish fishery FMP to reduce Chinook salmon bycatch in the Bering Sea pollock fleet. Under Amendment 91, the pollock fishery has the option of participating in a NMFS-approved Incentive Plan Agreement (IPA) to access a higher hard cap than is available in the absence of an IPA. The IPAs provide a new and innovative method of bycatch management. A data collection program is needed in conjunction with Amendment 91 to understand the effects and impact of the IPAs. The data collection program will focus on: (1) evaluating the effectiveness of the IPA incentives in times of high and low levels of salmon bycatch abundance, the hard cap, and the performance standard in terms of reducing salmon bycatch, and (2) evaluating how the Council’s action affects where, when, and how pollock fishing and salmon bycatch occur. The data collection program will also provide data for the agency to study and verify conclusions drawn by industry in the IPA annual reports. To ensure that a full assessment of the program is possible, the data collection program should be implemented at the time Amendment 91 is implemented or as soon as practicable.

To ensure that a full assessment of the program is possible from the start of the program, the data collection program should be separated into two phases, with a suite of data collection measures implemented at the time Amendment 91 goes into effect and sent to the Comprehensive Economic Data Collection Committee after IPAs have been fully developed and submitted to NMFS. The objective of this collection is to provide an improvement in the amount of data available to evaluate the effectiveness of incentives to minimize Chinook salmon bycatch under Amendment 91.”

The A91 EDR²⁸ and additional record keeping and reporting requirements associated with monitoring of Chinook salmon bycatch avoidance measures implemented concurrently, were published by NMFS on February 2, 2012 (77 FR 5389), effective March 5, 2012, approximately 17 months after rules implementing Amendment 91 (75 FR 53026) went into effect. The initial submission of EDR forms required under 50 CFR 679.65 were due on June 1, 2013 reporting data for the 2012 calendar year.

The A91 EDR reporting requirement applies most broadly to owners and leaseholders of AFA-permitted catcher vessels, catcher-processors, and motherships active in the Bering Sea pollock fishery, and to entities eligible to receive Chinook salmon PSC allocations (apart from AFA vessel owners, this includes AFA In-shore Sector harvest cooperative representatives, sector-based Incentive Plan Agreement representatives, and Community Development Quota Program group representatives), all of whom are annually noticed of EDR submission requirements by PSMFC as described previously. In addition, captains of AFA vessels who were active in the A or B season of the previous year pollock fishery are the target population of one of the three A91 EDR forms, but are assigned by vessel owners and not directly required to submit EDR forms to NMFS.

The Amendment 91 EDR is comprised of three separate forms: the Compensated Transfer Report, the Vessel Fuel Survey, and the Vessel Master Survey. The Compensated Transfer Report (CTR) is intended to collect transaction-level data on all bipartite transfers of Chinook PSQ allocation units during the pollock season in which monetary payment is included the transaction (i.e., “in-kind only” transactions are exempted). For each individual PSC transfer, the submitter is required to report: the NMFS id of the other party, the type of association between the submitter and the other party, the entity type of the other party, the number of Chinook salmon PSC transferred, the payment in \$US transferred, and a Y/N indicator that other assets besides Chinook PSC were included in the transfer. It was the NPFMC’s

²⁸ PSMFC’s Amendment 91 Chinook Salmon EDR webpage provides access to EDR forms, submitter instructions, and validation audit reports: <http://www.psmfc.org/chinookedr/>.

intention that the CTR would capture "spot-market" PSC transfers, exempting pre-season or other transfers in which salmon PSC and pollock quota are coupled and avoiding revelation of pollock quota lease value. The form is to be completed by all entities participating as lessor or lessee in one or more "compensated transfers" of Chinook PSC; however, no such transactions have been reported, and all CTR form submissions to date have been "certification-only" submissions.

The Vessel fuel survey is required for all AFA vessels that harvested BSAI pollock during the previous year, and collects four data elements:

- Average hourly rate of fuel consumption for the vessel while operating in the BSAI pollock fishery, reported separately for fishing and transiting; and
- Total annual amount (in gallons) of fuel loaded to the vessel during the year, and total fuel cost.

The vessel master survey is comprised of a series of qualitative response questions regarding fishing and bycatch conditions observed by vessel masters during the BSAI pollock fishery, and factors in effect that motivated Chinook bycatch avoidance (survey questions are listed below).

- If the vessel participated in an Incentive Plan Agreement, did the IPA affect your fishing strategy? If yes, please describe and discuss what incentives had the largest impact on your strategy.
- Did the amount and/or cost of Chinook PSC allocation available to the vessel lead you to make changes in pollock fishing operations? If yes, please describe.
- How would you compare the Chinook salmon bycatch and pollock conditions during the A and B seasons this year relative to the last two years? Please describe any unique aspects of the season.
- Did Chinook salmon bycatch conditions cause you to delay the start of your pollock fishing or otherwise alter the timing of your pollock fishing for some period during the past A and/or B season? If yes, please describe the Chinook salmon bycatch condition, when it occurred, and any change in your pollock fishing as a result.
- In the past year, did you end a trip and return to port early because of Chinook salmon bycatch conditions? [] YES [] NO. If YES, please indicate the number of trips that this occurred in each season (use a checkmark to indicate appropriate answer for each season).
- Please describe how any area closures or restrictions for the purpose of reducing Chinook salmon bycatch affected where and how you fished.
- Please describe how any regulatory or other area closures or restrictions for a purpose other than reducing Chinook salmon bycatch affected where and how you fished.
- Compared to a typical year, did weather or sea ice conditions have more, less or about the same impact on fishing as in a typical year? Please describe especially if there were particularly uncommon conditions at any point this year. If these conditions had an impact on your ability to avoid Chinook salmon bycatch, please describe.
- Were there exceptional factors that affected your pollock fishing this year? For example, were there unusual market or stock conditions, unusual pollock fishing conditions, or maintenance problems? Please describe.
- Separate from an Incentive Plan Agreement, were there other incentives for you to reduce Chinook salmon bycatch? If yes, please describe.
- Did actual or potential bycatch of species other than Chinook salmon cause you to change your harvesting decisions during the pollock season? If yes, please describe.

The structure of the A91 EDR is distinct from the other three EDRs in that its three forms are submitted separately, with AFA vessel owners as the primary submitter group, from which all three of the forms are required. The CTR form is also required from PSC entities, for whom it is the only EDR requirement. Vessel owners are also required to submit the fuel survey form, and to collect and submit vessel master

surveys completed by the captain(s) of the vessel designated by the owner.²⁹ All three forms include certification sections, which include conditions under which the submitter is exempted from the data reporting portion of the form, and is required only to submit the certification section of the form if such exemptions apply. The requirement to complete the data portion of the CTR form is conditional on participation in a “compensated transfer” as defined in the form, and for the vessel master and fuel survey forms, is conditional on the vessel being active in harvesting BSAI pollock during the reporting year. In addition, the implementing rule for the A91 EDR specified that all forms be electronically submitted online. This required development by PSMFC of a more complicated web application interface to facilitate vessel owners assignment of vessel master surveys while ensuring security of confidential data between linked users accounts.

4.2.3.4 Gulf of Alaska trawl EDR

The Council set forth the purpose and need for the GOA Trawl EDR in its February, 2013 motion as follows:

“The Council is interested in developing a data collection program that can be established prior to the implementation of a trawl catch share program in the GOA. This fast-tracked data collection would provide the Council and analysts with relevant baseline information that can be used to assess the impacts of a catch share program on affected harvesters, processors, and communities in the GOA.

In developing a data collection program that can be implemented quickly, efficiently, and with minimal burden on participating stakeholders, the Council intends to prioritize the collection of information that is relevant, reliable, and for which existing data sources do not exist. Given the potential for implementation of catch shares in both the Central and Western GOA, the scope of the analysis should include participants in both management areas.”

The final rule implementing the GOA Trawl EDR³⁰ was published December 2, 2014 (79 FR 71313), effective January 1, 2015, and establishing an initial submission due date of June 1, 2016 for EDRs reporting 2015 calendar year data. As noted previously, the EDR was intended by the Council to be implemented in advance of a catch-share program for the GOA that was in-development at the time of its 2013 motion. However, Council action on GOA bycatch management was suspended in December 2016.

The target population for the GOA Trawl EDR includes owners and leaseholders of catcher vessels and catcher/processors active in the Central and Western GOA groundfish trawl fishery, and operators of shoreside processing facilities that receive groundfish catch from the GOA. The EDR is comprised of three EDR forms: in addition to the Annual Trawl CP EDR described in Section 4.2.3.2 above, the Annual Trawl Catcher Vessel EDR, Annual Shoreside Processor EDR, and Annual Trawl CP EDR forms.

²⁹ 679.65(d) states: “Vessel Master Survey. (1) For any AFA -permitted vessel used to harvest pollock in the Bering Sea in the previous year: (i) The vessel master must complete the Vessel Master Survey, and the Vessel Master certification following the instructions on the form. (ii) An owner or leaseholder must complete the Vessel owner certification following instructions on the form. (iii) An owner or leaseholder must submit all Vessel Master Surveys, and each Vessel owner certification electronically on or before ...” However, no regulatory definition of “vessel master” is applicable to AFA vessels.

³⁰ PSMFC’s GOA Trawl EDR webpage provides access to EDR forms, submitter instructions, and validation audit reports: <http://www.psmfc.org/goatrawl/>.

The Trawl CV EDR form is required for all trawl CVs that harvested groundfish in the GOA during the previous year. The form collects the following data elements:

- Estimated market value and replacement value of vessel;
- Fishing gear costs – total direct capitalized expenditures and fully expensed costs for purchase, lease, installation and repair of a) salmon and halibut excluder gear, and b) trawl gear (including excluder gear other than salmon and halibut);
- Annual total fuel and lubrication cost and gallons;
- Total labor payments to a) crew and b) captain (total of final settlement payments), and number of crew, GOA groundfish only;
- Commercial crew license number or CFEC gear operator permit number, by individual crew member that worked on vessel during GOA groundfish trawl fishing.

The Annual Shoreside Processor EDR form is required from all shore-based processors that receive and process groundfish from GOA trawl fisheries. The forms collect the following data elements:

- Estimated market value; Borough assessed value or Replacement value;
- Municipal water utility consumption, gallons and cost, by month, Kodiak plants only;
- Municipal electrical utility consumption, kilowatt-hours and cost, by month, Kodiak plants only;
- Processing labor gross wages and hours, by month and housing-status (housed, non-housed), groundfish processing only;
- Number of processing employees, by month, groundfish only;
- Non-processing employment, number employed, total wages and salaries, annual total.

4.2.3.5 Summary overview of EDR variables by EDR form

Table 3 below provides a comparative overview of all data elements collected in the EDR program as a whole (with the exception of the A91 Vessel Master Survey). The first column groups together data element collected in one or multiple EDR forms by category: vessel/plant characteristics; revenue, capital expenditures, non-labor operating costs; employment and labor costs; and other operational data, with individual data elements broken out to show the comparison the scope of elements collected in the respective EDR forms. The description of data elements by EDR form shown in column 2-9 indicate the particular specification of the data element in the respective form, including stratification/aggregation (by fishery, annual), scope or reporting (annual, groundfish only), and other variations between EDR forms.

Table 3 Comparative overview of EDR variables across EDR forms

EDR Variables, by general group	BSAI crab			GOA trawl / Amendment 80			Amendment 91	
	Catcher vessel	Catcher Processor	Shoreside & floating processor	Catcher vessel	Catcher processor	Shoreside & floating processor	Vessel Fuel Survey	Compensated Transfer Report
Vessel / plant characteristics								
Name of Cooperative	Annual	Annual			Annual			
General vessel characteristics (1)					Annual			
Value of Vessel (Plant) and equipment Note: Assessed value reported for Shoreside processors only; Replacement value reported for CVs and floating processors only	Estimated market value; replacement value	Estimated market value; replacement value	Estimated market value; Borough assessed value or Replacement value	Estimated market value; replacement value	Survey value (survey date and inclusions)	Estimated market value; Borough assessed value or Replacement value		
Fuel consumption rate, average (gal/hour)					By activity (fishing/processing; steaming loaded; steaming empty); Annual		By activity (fishing; transiting); Pollock fishery	
Freezer capacity - storage capacity (pounds) and maximum product throughput (pounds per hour)					Annual			
Processing capacity - number of processing lines and maximum throughput (pounds per hour)					By species and product; A80 and GOA Groundfish			

EDR Variables, by general group	BSAI crab			GOA trawl / Amendment 80			Amendment 91	
	Catcher vessel	Catcher Processor	Shoreside & floating processor	Catcher vessel	Catcher processor	Shoreside & floating processor	Vessel Fuel Survey	Compensated Transfer Report
Revenue								
Ex-vessel	Revenue and pounds, by CR fishery and quota type							
1st Wholesale		Revenue and pounds, by affiliated (y/n), crab species, product, process, and box size	Revenue and pounds, by affiliated (y/n), crab species, product, process, and box size		Revenue and pounds (includes custom processing); Annual			
Custom processing provided		Revenue, raw pounds, and finished pounds, by CR fishery, product, and process	Revenue, raw pounds, and finished pounds, by CR fishery, product, and process					
Other vessel operation income					Revenue; Annual			
LLP sale revenue					By LLP sold			
Quota royalty revenue					Shares (mt) and royalty revenue; by A80 quota species			
Capital expenditures								
Fishing gear(3)				Capitalized plus expensed value; by type (halibut/salmon excluder), Trawl gear	Annual			
Processing equipment					Annual			
Other equipment					Annual			
Other capital expenditures					Annual			
LLP purchase cost					Annual			

EDR Variables, by general group	BSAI crab			GOA trawl / Amendment 80			Amendment 91	
	Catcher vessel	Catcher Processor	Shoreside & floating processor	Catcher vessel	Catcher processor	Shoreside & floating processor	Vessel Fuel Survey	Compensated Transfer Report
Operating costs, non-labor (annual expenses)								
Fuel and lubrication	1) Fuel cost and gallons; Annual 2) Fuel gallons, by CR Fishery	1) Fuel cost and gallons; Annual 2) Fuel gallons, by CR Fishery		Fuel and lubrication cost and fuel gallons; Annual	1) Fuel cost, lubrication cost; Annual 2) Fuel gallons, by activity (fishing/processing; steaming loaded; steaming empty); Annual		Fuel cost and gallons; Annual	
Food and provisions	By CR fishery	By CR fishery			Annual			
Bait cost	By CR fishery	By CR fishery						
Vessel and equipment - repair and maintenance costs					Annual			
Vessel and equipment - lease costs					Annual			
Fishing gear - purchases, lease, repair costs (excluding finance costs)					Annual			
Freight, storage, other sales costs for non-FOB sales					Annual			
Freight and storage other than for products					Annual			
Product and packaging materials					Annual			
Observer / monitoring fees					Annual			
Cooperative fees					Annual			
General Administrative Cost					Annual			
Insurance					Annual			
Fisheries landing taxes					Annual			
Raw fish purchases from other vessels, quantity and cost		By CR fishery and quota type	By CR fishery and quota type		Annual			
QS/PQS lease amounts and cost	By CR fishery and quota type	By CR fishery and quota type	By CR fishery and quota type		By A80 quota species			Chinook PSC; by compensated transfer
Custom processing purchased - quantity and revenue		By CR fishery, product, process	By CR fishery, product, process					

EDR Variables, by general group	BSAI crab			GOA trawl / Amendment 80			Amendment 91	
	Catcher vessel	Catcher Processor	Shoreside & floating processor	Catcher vessel	Catcher processor	Shoreside & floating processor	Vessel Fuel Survey	Compensated Transfer Report
Utilities (municipal) - water quantity and cost						Gallons and cost, by month; Kodiak plants only		
Utilities (municipal) - electricity quantity and cost						kWh and cost, by month; Kodiak plants only		
Labor cost and employment								
Labor cost - harvesting (4)	Final settlement paid, total by crew-type (fishing crew; captains) and CR fishery	Final settlement paid, total by crew-type (fishing/processing crew; captains) and CR fishery		Final settlement paid, total by crew-type (fishing crew, captains); GOA trawl	Gross wages, total by crew-type (deck crew; other non-processing crew); Annual			
Labor cost - processing (5)		Combined with harvesting labor cost	Gross wages and hours; by CR fishery		Gross wages; Annual	Gross wages and hours, by month and housing-status (housed, non-housed); Groundfish only		
Labor cost - Other personnel(6)			Total wages and salaries, non-processing personnel; Annual			Total wages and salaries, non-processing personnel; Annual		
Labor cost - total vessel labor	Total direct payment to crew (inclusive of settlements); Annual	Total direct payment to crew (inclusive of settlements); Annual						
Labor cost - non-wage expenses	Benefits provided (Y/N), by crew-type (fishing crew; captains); CR Crab	Benefits provided (Y/N), by crew-type (fishing crew; captains); CR Crab			Total benefits, recruitment, travel, and non-wage employment costs; Annual			
Employment - harvesting				Count of paid crew (excluding captains); GOA trawl	Employee count and average positions, by crew-type (deck crew; other non-processing crew); Annual			
Employment - processing			Employee count, by location of residence; CR		Employee count, average positions, and average hours per employee-day; Annual	Employee count, by month; Groundfish fisheries		

EDR Variables, by general group	BSAI crab			GOA trawl / Amendment 80			Amendment 91	
	Catcher vessel	Catcher Processor	Shoreside & floating processor	Catcher vessel	Catcher processor	Shoreside & floating processor	Vessel Fuel Survey	Compensated Transfer Report
			Crab and Annual					
Employment - other non-processing			Employee count; Annual			Employee count; Annual		
Employment - Crew licenses and permits	License/permit number, by crew member; CR Crab	License/permit number, by crew member; CR Crab		License/permit number, by crew member; GOA groundfish	License/permit number, by crew member; Annual			
Crew share system in use					Y/N, by some/all, processing/non-processing; Annual			
Other operational data								
Active days - fishing/processing					By activity (fishing; processing) and fishery (A80, GOA groundfish, other)			
Inactive days					Annual			
Travel/offload days					Annual			
Did vessel perform tendering?	Y/N; Annual							

Notes:

1: Home port, gross/net tonnage, length overall, beam, shaft horsepower, fuel capacity, year built

2: BSAI crab CV + CP + GOA trawl CV: estimated market value and replacement value; GOA trawl CP: survey value; BSAI crab shoreside processor + GOA trawl shoreside processor: borough assessed value, current estimated value; BSAI crab floating processor + GOA trawl floating processor: current estimated market value, current estimated replacement value

3: GOA trawl CV: separate reporting of excluder gear and trawl gear costs, includes total direct expenditures for lease, purchase, installation, and repair of gear; excludes finance costs; GOA trawl CP: separate reporting of fishing gear capital expenditures and fishing gear leases, repairs, and purchases fully expensed in calendar year

4: BSAI crab CV + CP + GOA trawl CV: reporting of labor payments to harvest crew and captain excludes non-wage expenses such as payroll taxes, unemployment insurance, and worker's compensation; GOA trawl CP: reporting of deck crew labor expenses lumps together captain and other harvesting crew reporting, and includes bonuses and payroll taxes but excludes benefits and insurance

5: GOA trawl CP: includes bonuses and payroll taxes but excludes benefits and insurance

6: BSAI + GOA trawl shoreside/floating processor: reporting of labor payments excludes non-wage expenses such as payroll taxes, unemployment insurance, and worker's compensation; GOA trawl CP: reporting of labor expenses for other employees includes bonuses and payroll taxes but excludes benefits and insurance.

An examination of Table 3 indicates a number of inconsistencies, at different scales, across EDR forms. The most obvious disparity is between the relative comprehensiveness of the content reported in the A80 EDR form compared to the scope of data collected in other EDR forms.

The A80 EDR collects measures of the physical capital stock of the vessel, and collects revenue and costs using a framework that has been tested for consistency with financial and other record systems in use by vessel owners. Revenue is collected for four primary income streams generated by the vessel and associated assets, each of which is reported as a simple annual aggregate value rather than disaggregated by fishery or bounded to one fishery or period during the year. Capital expenditures are collected for four major categories that collectively represent the physical and intangible assets comprising the productive capital of the vessel, and annual expenses are broken out into a reasonably complete set of accounting categories that likely correspond readily to information that vessel owners maintain as a matter of standard business tax and financial accounts. Labor costs and employment are broken out into coherent labor classes.

In contrast to the A80 form, no other EDRs collect general capital investment expenditures. The crab CP EDR form collects four categories of non-labor operating costs compared to 14 in the A80 CP form, but requires stratification by individual crab fishery. The Crab CV form collects fuel, provisions, and bait by crab fishery, whereas the GOA CV form collects annual fuel expenditures.

At a finer scale, there are additional inconsistencies across EDR forms in the specification of individual data items, as in the GOA CV reporting of trawl gear and excluder devices combines capitalized expenditures (paid over multiple years) with annual expenses, compared to separate treatment of fishing gear capitalized and expense costs in the Trawl CP form. Also notably, the GOA CV form includes three alternate scales of reporting: values aggregated to total annual value, GOA trawl value, and GOA groundfish value.

4.3 Historical overview of EDR development process

A review of the documentary history of the Council and NMFS efforts to develop economic data collections spans 20 years of Council minutes and Federal Register notices. Table 4 below provides a sequential timeline of significant events in the 20 year period over which EDRs evolved from the ambitiousness of the original crab EDR to the more modest goals of the GOA Trawl EDR. Current status of the EDR program. The timeline is drawn largely from Council minutes, and follows the course of significant actions and events in the development of each of the respective EDR collections, initially through the Council process, followed by rule-making and OMB review processes, to administration of annual EDR submissions and production of data. The brief text describing the identified events are primarily intended to provide sufficient context and a reference to the documentary record (i.e., minutes from the Council; FR notice, or other source). Rows are color-coded for each of the four EDR's, Council Process for actions pertaining to economic data collection generally, and Comprehensive Data Collection for the Council committee and associated initiative suspended in 2010.

Table 4 Comprehensive timeline of Alaska Economic Data Reporting actions in the Council and regulatory processes, 1998-2018.

Program	Action Date	Action
Council Process	April-98	Council received report on first meeting of the Social and Economic Data Committee (Dennis Austin- Chair)
Council Process	June-00	SSC received a report from AFSC economists on the voluntary Cost, Earnings and Employment Survey of BSAI Pollock Fishery project
Council Process	September-00	The Council received the report of the Social and Economic Data Committee's Aug-00 meeting regarding AFSC survey project.
Council Process	April-01	Council minutes regarding committees notes that the Socioeconomic Data Committee is still in place but the Council had determined earlier that the committee would remain inactive until fall of 2001.
Council Process	December-01	Interagency 'Initiative to Collect Socio-economic Data' proposal on Council agenda
Crab	April-02	At initial review of Crab Rationalization alternatives, elements and options for analysis, the Council approved an amended problem statement and elements and options for analysis, adding Element 7: "Implement a systematic data collection system for economic data, sufficient to monitor the relative distribution of both revenue and "quasi-rents"/profit in the processing and harvesting sectors."
Crab	June-02	Council takes final action on selection of Crab Rationalization preferred alternative, including a more detailed description of Element 16: a mandatory economic data collection re: scope, purpose and need, confidentiality, and enforcement, and noting need for congressional action to authorize collection of processor economic data. Tasks data collection committee to develop data collection alternatives for analysis.
Crab	October-02	Council receives data collection committee report with alternative draft survey designs; approves motion advancing three alternatives for treatment of fixed costs and suboptions for spatial disaggregation of cost data, direction to develop enhanced confidentiality protections and mandatory audit.
Crab	February-03	Council approves motion specifying mandatory data collection program elements A-F, defining scope of reporting to CR crab fishery costs; limiting fixed costs associated with variable costs; third-party data collection and blind data protocol, verification and enforcement.
A80	December-03	The Council finalized Amendment 80 a and b components and options for analysis, including a socioeconomic data collection program.
Crab	July-04	NMFS publishes Final EIS for BSAI Crab Fisheries and RIR/IRFA for Voluntary Three-Pie Cooperative Program; RIR/IRFA Ch. 3.17 and Appendix 3-6 compile detailed record of EDR development process.
Crab	May-05	EDR data collection implemented as part of the BSAI crab rationalization program under CFR 680.6, with Pacific States Marine Fisheries Commission designated as the official Data Collection Agent (DCA) charged with administration of the data collection and database custody. EDR forms are described in detail in CFR 680.6, based on design process in collaboration between AFSC and crab industry under Council oversight.
A80	June-05	Council final motion on A80 tasks staff to develop evaluation of "collecting cost, revenue, ownership, and employment data on a periodic basis to provide the information necessary to study the impacts of the program" in EA/RIR/IRFA.
Crab	July-05	Deadline for mandatory EDR submission for pre-rationalization reference years 1998, 2001, and 2004. PSMFC distributes follow-up questionnaire to solicit submitter feedback.
A80	February-06	Council final motion on A80 tasks staff to work with NMFS to develop specific elements of socioeconomic data collection and include as appendix to EA/RIR/IRFA.
A80	April-06	Council reviews revised draft EA/RIR/IRFA, with draft economic survey as appendix; NMFS letter to Council (dated 3/28/06) informing of newly issued OMB guidance re: requirements for PRA clearance for statistical surveys, advising appointment of data committee to address OMB guidelines in design of economic data collection element. Final motion includes description of Council process for developing data collection program: 1) convene staff workgroup to address OMB requirements; 2) host industry workshop at June Council meeting; 3) Council review and approval of program in consideration of SSC comments.

Crab	May-06	Deadline for first Annual EDR submission, with mandatory submission of completed EDR forms reporting data for the previous calendar year crab operations; EDR forms revised to incorporate limited modifications to address survey design errors identified by submitter feedback.
A80	June-06	Council reviewed a final draft EA/RIR/IRFA and took final action to implement Amendment 80; Section 3.2.12.15 of analysis includes detailed description of program corresponding to PRA Supporting Statement Part B (i.e., justification; specification of data elements; models and measures, confidentiality protection; data verification and audit process; costs and reporting burden estimates). NMFS representative recommends Council develop a comprehensive data collection rather than program-specific “islands of information”; Council tasks staff to develop discussion paper.
Comprehensive Data Collection	June-06	During staff tasking Council requested that the agency prepare discussion paper on a comprehensive socioeconomic data collection program, and bring it to the Council for review in October.
Comprehensive Data Collection	October-06	Council reviews discussion paper on comprehensive economic data collection. Approves motion requesting AFSC to coordinate workgroup of agency, Council, GC, OLE staff to further develop discussion paper on structure data collection program and draft surveys by sector (including shoreside processors/motherships), and be responsive to AP and SSC comments.
Crab	October-06	Selected EDR submitters notified with directions for submission of audit materials, following AFSC/PSMFC development of procedures for audit validation as required by CFR 680.6; selection of CPA firm AKT, LLP contracted by PSMFC as the third party EDR auditor.
Crab	November-06	Informal discussions between AFSC and Council staff and industry representatives following the 2006 EDR submission and initiation of audit proceedings, identifying an array of data quality and confidentiality concerns.
Crab	December-06	Council requests development of draft protocols for use of EDR data to address data quality and confidentiality concerns for Council and industry review.
Crab	March-07	Brian Garber-Yonts of the AFSC presented “Confidentiality and Data Quality Protocols for BSAI Crab Economic Data: A Discussion and Proposal.” The AP recommended the processes contained in the confidentiality and data quality protocols for BSAI Crab Economic Data paper be followed. The Council motion acknowledges the process laid out in the discussion paper and approves the Advisory Panel’s recommendation.
Comprehensive Data Collection	March-07	Council receives comprehensive economic data collection discussion paper and workgroup progress report; noting need for industry input, NMFS indicates formal Council workgroup may be necessary to fully pursue data collection program. Council takes no action pending SSC review of discussion paper.
Crab	April-07	Council receives discussion paper on development of data quality and confidentiality protocols and approves process proposed.
Crab	June-07	Submission of EDR reports for CY 2006; deadline revised from May 1 to June 28 to accommodate tax reporting schedule and finalization of ex-vessel and crew settlement contracts; online EDR form is implemented for catcher vessel sector EDR with automated validation checks; additional EDR revisions to address survey design errors identified by submitter feedback. [Note: as of December 2011, EDR forms and administrative process has remained largely constant since 2007.
Crab	August-07	Formal public meetings in Kodiak and Seattle to solicit further crab industry feedback regarding potential reporting errors and survey design flaws were held in July and August.
A80	August-07	BSAI Amendment 80 EDR PRA package was pre-approved by OIRA
A80	September-07	BSAI Amendment 80 EDR PRA package was approved without change by OIRA
Comprehensive Data Collection	October-07	Council receives update on inter-agency workgroup and reports from AP and SSC on discussion paper. At staff tasking, Council agrees that Chair will appoint small committee, to include industry sector and community representatives, to work with inter-agency workgroup on developing proposed data collection program, including clarification program goals.
A80	October-07	NMFS publishes final rule implementing BSAI Amendment 80 EDR (72 FR 52668); includes A80 EDR program under CFR 679.94, designating PSMFC as data collection agent.
Comprehensive Data Collection	February-08	Council announces appointments to Comprehensive Socioeconomic Data committee (Glenn Reed, Chair); Committee holds first meeting.

Crab	February-08	Council receives report from AFSC on Crab EDR database documentation in the form of detailed tabular metadata, including all data quality evaluation protocols and results to-date; Council initiates process for industry review of data use and confidentiality protocols through Pacific Northwest Crab Industry Advisory Committee (PNCIAC).
Crab	March-08	PSMFC/AKFIN completes initial transfer of the Crab EDR database from MS Access into AKFIN's Oracle relational database system, enabling more robust database management and integration of EDR database with other fisheries databases in AKFIN system; completes A80 EDR database design in Oracle.
Crab	May-08	Council receives updated report from AFSC on Crab EDR database documentation/metadata; Council establishes a process for formal review of EDR metadata and suspends use of EDR data pending completion of review. PNCIAC EDR subcommittee holds meeting to review metadata document; formal public review of Crab EDR database initiated.
A80	June-08	Deadline for first annual Amendment 80 EDR submission, with mandatory submission of completed EDR forms reporting data for the previous calendar year operations.
Crab	June-08	PNCIAC EDR subcommittee meeting: PNCIAC completes formal review Crab EDR metadata/data quality; subcommittee provides detailed comments on metadata and data quality findings.
Crab	September-08	PNCIAC EDR subcommittee meeting: AFSC issues replies to comments; subcommittee meeting.
Crab	October-08	PNCIAC EDR subcommittee meeting: Two-day PNCIAC subcommittee workshop; Three-tier (A/B/C) data quality classification applied to EDR data.
Crab	December-08	Council receives report on Crab EDR data quality findings and data use and confidentiality protocol recommendations finalized by PNCIAC subcommittee; Council votes to endorse Three-tier data quality classification and approves use of A/B quality data items; tasks staff to initiate process to revise EDR forms to improve data quality and reduce burden.
Comprehensive Data Collection	February-09	Council receives staff report inter-agency workgroup progress, includes draft agenda for industry workshop in February.
Crab	February-09	AFSC releases proposals for revisions to EDRs; subcommittee meetings to review data use protocols and best practices guidance to EDR submitters for recordkeeping.
A91	April-09	Council takes final action to approve BSAI FMP Amendment 91. In staff tasking, Council requests AFSC develop a discussion paper for a data collection program for the pollock fleet to provide information necessary to evaluate whether the program is meeting the Council's intent; Chair to assign Salmon Bycatch Committee members to the Socioeconomic Data Committee.
A91	May-09	Comprehensive Data Collection Committee meeting to review Council's Chinook bycatch motion and the data collection motion, drafts recommendations on range of potential data collection alternatives.
A91	June-09	Council receives discussion paper on establishing the BSAI Amendment 91 Chinook salmon EDR from AFSC and report on Data Collection Committee recommendations; tasks staff with an analysis of a range of alternatives for the BSAI Amendment 91 Chinook salmon EDR.
Crab	July-09	PNCIAC EDR subcommittee meets to review AFSC working drafts of revised Crab EDR forms; PNCIAC rejects proposed EDR revisions and initiates crab sector workgroups to complete industry review of accuracy and burden by EDR variable.
Crab	October-09	PNCIAC Subcommittee Sector workgroups complete industry review of accuracy and burden by EDR variable. PNCIAC issues report to Council on conclusion of metadata/data quality review process.
Council Process	October-09	Council approves motion tasking staff to draft a discussion paper to: review objectives and structuring of data collection; address potential to directly inform relatively immediate, specific, and routine management questions versus research questions of indirect relevance to specific Council analyses and decisions; incorporate AFSC's data quality review of the crab economic data reports, PNCIAC's review, and other information from the Amendment 80 EDR and Chinook salmon bycatch data collection analysis; discuss the effectiveness of data collection in serving analytical and research needs before the Council with the goal of assisting the Council in developing future data collection programs, setting collection and analytical priorities, and revising the Crab Economic Data Reports.
A91	October-09	Council initial review of draft RIR/IRFA for BSAI Amendment 91 Chinook salmon EDR; the Council; final motion amends the alternative set and tasks staff to return draft analysis for initial review in December.

A91	December-09	Council receives public review draft of A91 BSAI Salmon Bycatch Data Collection RIR/IRFA; approves motion adopting a purpose and needs statement for the data collection, selecting a preferred alternative, and advising that implementing rule should be designed to provide flexibility to revise EDR forms as needed, subject to Council review.
Crab	February-10	Council receives staff discussion paper on economic data collection and initiates review of crab EDR program, to be followed by a review of the A80 EDR; approves motion requesting staff discussion paper assessing crab EDR purpose and need and evaluation of informative value, accuracy, and collection cost by variable; motion also suspends further development of economic data collection (i.e., Comprehensive Data Collection initiative) pending completion of review.
Crab	July-10	PSMFC/AKFIN develop and implement database audit test plan to validate database integrity.
A91	August-10	NMFS publishes final rule implementing Amendment 91 to BSAI Groundfish FMP (75 FR 53026)
Crab	October-10	Council receives discussion paper on Crab EDR revision; adopts and amends AP motion stating purpose and need for Council action on Crab EDR Revision and tasking discussion paper developing alternatives for EDR revision based on retaining variables identified as “critical operational components” and options for stratification/aggregation by fishery; motion states “As analysts develop, refine, and verify methods for accurately collecting additional informative data elements the Council will consider expansion of the data collection program to include those elements. This process can also inform the future Council action regarding other existing and future EDR programs.”
Crab	October-10	AFSC releases draft Crab SAFE Economic Status Report, representing first public release of statistical summaries of Crab EDR data.
A91	October-10	Council review of draft regulations, EDR forms, draft of revised logbook forms, and PRA Supporting Statement for A91 Chinook salmon EDR, and regulatory markup of IPA and cooperative annual report requirements and logbook revision; Council adopts the AP motion to approve EDR forms with minor revisions.
Crab	April-11	Council receives staff discussion paper on crab EDR revision and advances alternatives for initial review.
Crab	August-11	AFSC holds Center for Independent Experts (CIE) review of BSAI Crab EDR program, to review methods and practices employed to date and provide independent reviews and recommendations for methodological improvements and appropriate standards. Public meeting convened at AFSC 8/23-24 (Dr. Chris Anderson/Univ. Rhode Island, Chair) included the participation of crab industry representatives and other members of the public.
A91	February-12	NMFS publishes final rule implementing BSAI Amendment 91 Chinook salmon EDR data collection (77 FR 5389) under CFR 679.65
Crab	February-12	Council adopts a preferred alternative for Amendment 42 to Crab FMP amending the crab EDR program; final motions recommends implementing regulations be developed to permit flexibility to modify forms as needed, subject to Council review. Discussion in staff tasking recommends “cooling off” of efforts to implement new economic data collection.
A91	March-12	OMB approves PRA clearance for BSAI Amendment 91 Chinook salmon EDR
GOA Trawl	October-12	Council approves motion tasking staff to draft a discussion paper developing proposed elements and options on a baseline economic data reporting program for Western and Central GOA trawl industries, including harvesters, processors, and catcher processors.
GOA Trawl	February-13	Council receives discussion paper on economic data collection for Central GOA Trawl fishery; approves motion to initiate analysis of a data collection program for the CGOA and WGOA trawl sectors that would collect economic data pre-catch shares to understand the effects of a GOA trawl catch share program on harvesters, processors, communities and catcher processors.
GOA Trawl	June-13	Council initial review of draft RIR/IRFA for GOA Trawl Data Collection; approves motion adopting modified Alternative 2 as the PPA, and recommends release of RIR/IRFA for public review. SSC recommends that the draft document not be released for public review at this time, pending clearer articulation of purpose and objectives for the proposed data collection action. AP recommends that third-party EDR data collection agent be used.
GOA Trawl	October-13	Council final action on GOA Trawl Economic Data Collection; adopts preferred alternative including specified reporting requirements for catcher vessels, catcher processors, and shoreside processors active in Central and Western GOA groundfish trawl fisheries, revising A80 EDR form, and requiring third-party data collection agent, blind data protocol for CV and shoreside processor data, and data verification consistent with Crab EDR audit protocols. SSC recommends that the draft document not be released for public review.

A91	February-14	Council receives report from AFSC on A91 Chinook Salmon EDR data collection measures, process, data quality findings and other implementation issues to date; report notes problems in logbook checkbox implementation, no data submitted in Compensated Transfer Report forms, and potential need for revising Vessel Master Survey questions. Council takes no action.
GOA Trawl	April-14	Council receives staff presentation from AFSC on proposed data collection procedures and draft EDR forms for GOA Trawl EDR, and approach for implementation rule. Council approves motion recommending NMFS proceed with rulemaking, and provide PRA clearance package and any revisions to EDR forms for Council review prior to submission to OMB.
A80	April-14	Council receives report on early draft of Amendment 80 5-year review document from staff. SSC report on review of draft document identifies suggestions for improvement, noting the draft includes an evaluation of quality and the accessibility of the A80 EDR data, identifies some duplication with other data reporting, and suggesting some refinements in questionnaire to improve clarity that should be considered in finalizing revised Trawl CP form for GOA Trawl EDR implementation.
A91	June-14	Deadline for first annual A91 Chinook salmon EDR submission.
GOA	December-14	OMB approves PRA clearance for GOA trawl EDR (includes three-year extension with revisions for A80/Trawl CP EDR)
GOA/A80	December-14	NMFS publishes final rule implementing GOA Trawl EDR and Annual Trawl Catcher/Processor (revised A80) EDR (79 FR 71313).
Crab	June-16	Council receives staff presentation on BSAI Crab Rationalization 10-Year Review document and Social Impact Analysis appendix; approves motion accepting the review as complete and final, with addition of items recommended by SSC
Council Process	June-16	Council approves motion to develop a proposal to establish a Social Science Planning Team
GOA	June-16	Deadline for first annual GOA Trawl EDR submission.
GOA	December-16	Council moved to postpone further work on the Gulf of Alaska Trawl Bycatch Management action indefinitely
Council Process	April-18	Staff Tasking: The Council requests that NMFS prepare a discussion paper that describes the Economic Data Report requirements for all programs, explains how the data are used, and provides estimates of the costs of complying with the EDR requirements. The Council can then use the information in the discussion paper to determine if revisions to EDR requirements are needed and the priority and process for analysis of proposed revisions.

Sources: Council minutes available at <https://www.npfmc.org/meeting-minutes/>, PRA Clearance search available at <https://www.reginfo.gov/public/do/PRASearch>

The detailed history of the various economic data collection initiatives shown in Table 4 is documented in the RIR/IRFA sections³¹, including workgroup reports, descriptions of alternatives, and the factors considered in evaluating alternatives in the analyses. For the purpose of this discussion paper, a synthesis of this history is more appropriate than a detailed recounting.

With passage of the American Fisheries Act in 1998, following on from the introduction of the Halibut/Sablefish IFQ program in 1995, both the Council and agencies were confronted by limitations in their ability to assess the complex social and economic dynamics involved in transitioning to rationalized management. A critical and pervasive analytical limitation was the lack of economic data collections consistently collecting social and economic data beyond gross revenue values from commercial fishing industry participants. The Council formed the Social and Economic Committee in 1998 to work with members of the AFA pollock sectors to develop an agreement from industry to voluntarily report firm-level cost data. Concurrently and in coordination with that effort, AFSC economists worked with pollock industry economists and financial analysts to develop detailed cost, earnings and employment surveys for the CV, CP, Floating processor, and Shoreside sectors. Survey instruments and other materials jointly developed by AFSC and pollock industry economists for the survey project are available on PSMFC's website.³² A visual comparison of the pollock surveys developed in that project with the original crab EDR forms, the pollock CP³³ survey, and the current A80 survey reveals obvious evidence of parentage. It is also notable that the data verification process envisioned - for voluntary surveys - employed third-party CPA audit review of supporting records, and that this element of the project was included at the request of pollock industry representatives to ensure that "information collected is consistent across firms and industry sectors." Following more than two years of industry consultation and development, AFSC, working with PSMFC, fielded the pollock cost/earnings surveys in early 2000, receiving only one completed response. Although the pollock survey project was unsuccessful as a voluntary survey, it laid the groundwork for both the Crab and A80 EDRs, although ultimately to different effect, and several of the questionnaire and survey design and implementation elements of that project are reflected in the framework of the current EDR program as summarized in Section 4.2.2 above.

With the failure of both AFSC's pollock survey project and the Council's Social and Economic Committee, which was discontinued after 2000, an interagency effort to develop mandatory economic data reporting for FMP fisheries was initiated in 2001. The course of development of the original Crab EDR beginning in 2002 followed from the work undertaken by the interagency working group, and to a large extent followed the model established by the pollock survey project, though in the context of

³¹ Crab EDR: a) An extract of EIS (NMFS, 2004a) and RIR/IRFA (NMFS, 2004b) sections addressing the economic data collection element of the Crab Rationalization program, with Appendix 1.3-6 (missing from the RIR/IRFA) are available from AFSC at https://www.afsc.noaa.gov/REFM/Socioeconomics/PDFs/EIS_EDRsections.pdf.

b) The RIR/IRFA for Amendment 42 to the Crab FMP (NMFS, 2013) describes the analysis of alternatives for restructuring the Crab EDR and rationale for the preferred alternative that specified the current crab EDR forms. The summary of the CIE review of the Crab EDR program is a notable representation of the competing visions of economic data collection that have contended throughout the series of initiatives referenced in Table 4 above. <https://alaskafisheries.noaa.gov/sites/default/files/analyses/amd42ririrfa0213.pdf>.

A80 EDR: The Amendment 80 EA/RIR/IRFA (NPFMC, 2007), Section 1.11.13.16 (available at <https://alaskafisheries.noaa.gov/sites/default/files/analyses/earirirfa0907.pdf>) contains the analysis of alternatives for the A80 EDR, including the justification and statistical methods incorporated into the PRA Statement - Part B prepared for OMB review.

A91 EDR: Draft RIR/IRFA for a Proposed Chinook Salmon Bycatch Data Collection Program (NPFMC, 2014), available at <https://www.npfmc.org/wp-content/PDFdocuments/bycatch/ChinookDataCollection1209.pdf>.

GOA Trawl EDR: RIR/IRFA (NMFS, 2014b) available at

<https://www.regulations.gov/contentStreamer?documentId=NOAA-NMFS-2014-0035-0010&contentType=pdf>.

³² PSMFC Fisheries Economics Data Program Surveys webpage <http://www.psmfc.org/efin/surveys/survey.html>.

³³ http://www.psmfc.org/efin/surveys/ak_surv_cp.pdf.

mandatory reporting. The process is well documented in the RIR/IRFA produced for the CR Program (NMFS, 2004; in particular, Appendix 306 to the RIR/IRFA).

The draft Crab EDR forms developed by the Council-appointed data collection committee were adaptations of the pollock survey instruments, and were intended to support the production of the same set of standard economic and financial performance metrics that pollock industry and AFSC economists had spent two years developing. As such, the committee retained an equivalent scope of variables in the Crab EDRs, but *increased* the level of disaggregation. That is, whereas the pollock surveys directed respondents to report the annual total value for each variable, followed by more detailed breakouts by fishery, the crab EDRs required submitters to report by-fishery values for all variables, but not annual values. Further, in order to address community effects of rationalization, the crab forms added disaggregation by location of purchase for most of the cost variables. The decision was also made that the EDRs would be limited as much as possible to collecting data about crab fishery activity only. Therefore, the EDR design that the Council selected as the preferred alternative specified that variable costs were only reported for crab fisheries, and fixed costs would only be reported for expenditures that affected variable cost expenditures in crab fisheries. The result of the additional layers of stratification resulted in surveys of daunting complexity. Industry representatives on the data committee were nonetheless confident that they could be completed, and pretesting of the forms with a small number of volunteer vessel owners and accountants was appeared to be reasonably successful at the time, but did not fully replicate the breadth of challenges for the actual submission process.

The design of the A80 EDR also started by adapting the pollock CP survey and relied on the same conceptual framework of measures and metrics. The Council's purpose and need for the A80 EDR was more narrowly focused on assessing economic performance within the A80 sector, and in particular, the effectiveness of efficiency gains achieved by the program in providing more flexibility to avoid bycatch. As such, rather than increasing the complexity of the pollock survey by adding additional stratification, the A80 survey simplified the original by eliminating by-fishery disaggregation and limited required reporting to annual aggregate values for most variables. As a result, 1) the reporting burden and cost are much lower; 2) the accuracy of the data reported is sufficient for use in most applications; and 3) the analytical framework originally conceived in the design of the EDR has been effectively applied in the A80 5-Year review and is used as the basis for annual updates of the A80 chapter of the Groundfish Economic SAFE. In simplifying the A80 EDR from the more disaggregated detail used in the pollock survey, significant data quality may have been sacrificed. That is, the aggregate level of the data may not capture the additional degree of statistical variation that would be needed to test a model using EDR data alone. The A80 sector is, by some measures, increasingly homogeneous, and further statistical investigation of changes within the sector in response to ongoing management may prove limited by the aggregate level of the data. This has not proven to be a critical limitation for the Council's purpose thus far, and may be irreducible with the small number of operators in this fishery.

The outcome of the original Crab EDR was markedly different. The two-step approach used in the pollock survey, reporting annual aggregate values in the first step, followed by disaggregating fishery-level values in the second step, might have prevented some of the ensuing problems. This would likely have been straightforward and unchallenged on the basis of accuracy or burden. The complexity of the crab EDRs, however, resulted in excessive submitter burden and heightened industry doubts about the quality of the data. In addition, the optics of verification audits and certification statements threatening prosecution of perjury caused anxiety and misapprehensions about the precision that respondents were expected to meet in EDR data. If the EDRs had retained annual aggregate values, these could have been readily reported by respondents, verified by auditors if needed, and fishery-level breakouts would likely have been interpreted as "to the best of your ability." Alternately, if disaggregated reporting had actually proved intractable, a ready solution would have been to retain annual-level reporting and to assess alternatives for revising the stratification design of the forms. Annual-level data would also have been made available to Council staff much sooner and synthesized into information of utility to the Council

much sooner, with a clearer path to rebalancing the burden and data quality in revising the EDR design. This retrospective analysis of the Crab and A80 EDR designs is informed by hindsight. At the time, Crab EDRs were being designed in a collaborative effort with industry, but in the midst of developing the rest of the rationalization program. The Council's purpose and needs statement for the Crab EDR identified multiple analytical objectives, and the EDRs were designed in an effort to accomplish all of them. Given the commitment under statute of limited timeline for implementation, the pretest of the survey instruments with a small panel of crab vessel owners and processing sector accountants was incomplete and not adequately representative of the heterogeneous populations of submitters, or the actual business processes that would be involved in completing the surveys.³⁴

In retrospect, AFSC and PSMFC were unprepared to respond to the Council's expectations in providing timely results from the crab EDR, both in response to the Council's inquiries regarding data quality, and in producing and facilitating useful analyses from the data. Apart from the burden of completing the original EDRs for submitters, the complexity of the data collected overwhelmed administrative resources needed to manage the data efficiently. The highly stratified nature of the data required the use of a relational database and qualified database programmers. As noted in the timeline above, it wasn't until March of 2008 that Crab EDR data were transferred to the AKFIN Oracle server and became reasonably accessible to analysts, and database administration continued to present significant challenges until July of 2011.

The complexity of the challenges in implementing the Crab EDR program were underestimated and many were unanticipated. AFSC's attempt to retroactively implement data QA/QC best practices without sufficient experience and resources, contributed to counterproductive communication with industry and the Council. The development and presentation of the Crab EDR metadata document to the Council at the March, 2008 meeting did not provide sufficient basis for determining how to proceed toward release of EDR data for use by analysts, and posed the Council with the technical problem of synthesizing metadata into a practical index of data quality.

This was resolved by approval of a motion initiating a metadata review process recommended by PNCIAC³⁵, specifying a series of public meetings for staff to present EDR metadata, receive comments and recommendations provided by PNCIAC and the public and then to be incorporated "as appropriate" into a revised draft metadata document, and final comments and recommendations resulting from the review to be provided to the Council by PNCIAC. The result of that process was the introduction of an A/B/C data quality grade, summarizing the comments and recommendations AFSC received from PNCIAC and crab industry members as a summary indicator of data quality in the EDR metadata. PNCIAC presented its report to the Council at the October, 2009 meeting, and the Council initiated a staff discussion paper "reviewing the potential objectives for economic data collection and the structuring of data collection initiatives to achieve those objectives", specifically addressing:

- (1) Relatively immediate, specific, and routine management questions and
- (2) Less defined research initiatives that may have more indirect relevance to specific Council analyses and decisions.

The Council took final action at the December, 2009 meeting on its preferred alternative for the A91 Chinook salmon EDR. As described above, in its purpose and need and selection of preferred alternative, the Council pursued a narrow data collection and analytical objective focused on assessing the

³⁴ Snijkers, et al. (2013) provides a detailed treatment and guidelines for implementing survey design and testing of complex surveys of business enterprises. The burden-hour estimates that Crab EDR submitters reported to NMFS and PSMFC during the initial years of the data collection exceeded 40 hours, and were evidence of a more complex response process than indicated in the pretests performed in finalizing the Crab EDR forms.

³⁵ NPFMC April 2008 Motion, C-2(b)BSAI Crab Rationalization Program: Economic Data Reporting

effectiveness of specific bycatch avoidance incentives measures under Amendment 91. The preferred alternative limited cost data collection to two items relevant to bycatch avoidance choice behavior (fuel and Chinook salmon PSC). The alternatives considered for analysis did not include additional data collection items and analytical methods recommended by AFSC to more fully capture the direct and opportunity costs of bycatch avoidance and other factors forming the economic context of bycatch avoidance choices.

The discussion paper reviewing economic data collection objectives and associated data needs was presented at the February, 2010 meeting. The paper covered some of the same history discussed here and offers additional insights on the process. The paper made several recommendations, three of which appear to have been influential in subsequent Council actions: data collections should be 1) implemented independent of major management actions; 2) limited to data that inform management decisions, are not duplicative, and can be accurately and cost effectively collected; and 3) should be developed deliberately and incrementally. The Council tasked staff to begin an analysis of the Crab EDR, assessing the purpose and need and evaluating the accuracy, cost, and information value of data elements in the Crab EDR forms, and suspending further action on new data collection pending resolution of challenges with the Crab and A80 EDRs.

In the process of developing Amendment 42 to revise the Crab EDR, the Council defined its purpose and need as follows:

“...Council review of the EDR program, development of the EDR metadata through PNCIAC and testimony from the industry has resulted in the identification of substantial portions of the EDR data that are inaccurate. In addition, several elements are wholly or partially redundant with other existing data collection requirements, and some components may not further the Council's objectives. The cost to industry, both directly through data submission, and indirectly through cost recovery funding of program administration, outweigh the benefits of the resultant data and greatly exceed estimates provided in the initial analysis of the EDR program and in the accompanying regulatory analyses.

To address these problems, the Council intends to amend the EDR process so that the data collected is accurate, informative to the Council, not redundant with existing reporting requirements, and can be reported by industry and administered at a reasonable cost.

The Council expressly wants to limit the EDR to the collection of data that have been demonstrated, through the development of the EDR metadata, and other reviews of the data, to be sufficiently accurate. Data collection should be structured and specific elements identified, to minimize costs while maintaining accuracy and providing the greatest information value to the management decision making process.

As analysts develop, refine, and verify methods for accurately collecting additional informative data elements the Council will consider expansion of the data collection program to include those elements. This process can also inform the future Council action regarding other existing and future EDR programs.

The Council requests staff to prepare a discussion paper developing the following alternatives for Council consideration:

- 1) critical operational components by individual crab fishery,*
- 2) critical operational components from all crab fisheries (aggregated across all crab fisheries), 3) critical operational components from all fisheries (aggregated across all fisheries), and*

4) all operational components by individual crab fishery (similar to current data collection program).”

It is unclear to what degree this purpose and need modified or superseded what had previously been conveyed as the fundamental purpose of economic data collection in the purpose and need statements and analyses for the Council’s previous action. Previously, the purpose of economic data collection had been described in analyses as collecting data to permit economic analysis, using specific metrics recognized by economists and policy makers as indicators of economic performance. The analysis of alternatives for the Council’s action addresses their potential to address the Council’s original intent:

“In its original consideration of this action, the Council suggested the data collected by the program should be used to support several types of economic and social analyses (such as estimates of profits, quasi rents, and the distribution of revenues from the fisheries). The Council’s purpose and need for this action suggests that the data collection program may not be providing the benefit anticipated due to data inaccuracies. Implicit in that statement is the suggestion that the data may not support the anticipated analyses. The following table (see Table 1) is a brief summary of analyses identified by in the analysis of the Council’s initial action and an assessment of the potential for the various alternatives considered here to support those analyses. In general, none of the data collection alternatives under consideration (including the status quo) provide adequate data to support most of the economic measures of concern to the Council in the initial analysis.” (NMFS, 2013, pp.82)

As is clear from review of the analysis, no alternatives were considered that simplified the disaggregated reporting requirements identified as the principal cause of reporting errors in metadata reviewed by PNCIAC and in the CIE review of the Crab EDR program (CIE, 2011). In stating a purpose and need limiting EDRs to collecting data that are accurate and informative in themselves, the Council did not identify a revised analytical purpose other than that conveyed by the “critical operational component” criteria.

Relatively soon after the Council adopted their preferred alternative for Amendment 42 amending the crab EDR program, the Council approved a motion tasking a discussion paper developing proposed elements and options on a baseline economic data reporting program for Western and Central GOA trawl industries, including harvesters, processors, and catcher processors in October, 2012. The Council received a discussion paper on economic data collection for Central GOA Trawl fishery in February 2013 and approves motion to initiate analysis of a data collection program for the CGOA and WGOA trawl sectors that would collect economic data pre-catch shares to understand the effects of a GOA trawl catch share program on harvesters, processors, communities and catcher processors. By June 2013, the Council reviewed the draft RIR/IRFA for GOA Trawl Data Collection and approves motion adopting modified Alternative 2 as the preliminary preferred alternative (PPA). On final review in October, the Council adopted the preferred alternative including specified reporting requirements for catcher vessels, catcher processors, and shoreside processors active in Central and Western GOA groundfish trawl fisheries, revising the A80 EDR form, and requiring a third-party data collection agent and blind data protocol for CV and shoreside processor data, and data verification consistent with Crab EDR audit protocols. OMB approved the PRA clearance for the GOA trawl EDR in December 2014, with a June 2016 deadline for the first year’s EDR submission. The Council postponed further action on GOA Trawl Bycatch Management in its December 2016 meeting, but the GOA Trawl EDR reporting requirements remain unchanged.

5 EDR Program Operations, Costs, and Limitations

5.1 Summary of EDR program operations

5.1.1 Data collection to-date

5.1.1.1 Summary of EDR forms submitted and reporting compliance

Table 5 summarizes the number of EDR forms submitted for each reporting year, beginning with historical Crab EDR forms that were submitted to PSMFC in 2005. The table reports submission of completed and certified EDR data forms. Certification-only EDR submissions are not shown.³⁶ Compliance with EDR submission requirements is effectively 100%. Gross non-compliance with EDR submission requirements has been limited to a small number of cases that involved bankruptcy and/or more extensive violations of federal fishery regulations. Late EDR submissions are handled by PSMFC on case-by-case grant of deadline extensions up to two-weeks. Since 2005, 40 EDR submissions have been referred to NMFS OLE due to multiple missed deadline extensions or failure to provide timely response to audit requests. Other than one formal written warning from OLE in 2007, late EDR and audit materials have submitted following a phone contact from OLE.

Timely compliance with EDR submission and audit requests have been somewhat more problematic in the GOA CV sector, but not excessive for a new reporting requirement, and submitters have generally cooperated with PSMFC in good-faith to complete EDR submissions and audit requirements. Currently, 9 2017 Annual GOA Trawl CV EDRs remaining outstanding from 2018, however 7 of these appear to be incidental catch amounts and only two appear to have significant landings of Central and Western GOA groundfish. Referral to OLE will be considered depending on compliance in the ongoing 2018 EDR collection.

³⁶ As described in Section 4.2, certification-only submissions occur in cases where entities are subject to the EDR submission as a permit holder or owner of a vessel or processing plant under the applicable subsection of 50 CFR 679 or 680, but did not operate in the fishery or management program that an EDR form pertains to and is exempted from completing the data portion of the form. Certification-only Crab EDR submissions prior to 2005 were nearly equivalent to the number of completed data forms, and remained as high as 25% of the number of completed data forms through 2011. To avoid needless paperwork burden of certification-only EDRs, in 2012 PSMFC/AKFIN improved methods for minimizing the number of certification-only submissions by avoiding distribution of EDR notices to entities that can be confirmed by administrative records (e.g., catch accounting) as exempt from EDR data submission requirements.

Table 5 Counts of Completed EDR Data Forms by EDR Reporting Year

EDR Reporting Year	CRAB EDR			A80/GOA TRAWL EDR			A91 CHINOOK SALMON EDR			All EDR Forms
	CV	CP	Processors	A80/GOA CP	CV	GOA SP	CTR	Fuel Survey	Vessel Master Survey	
1998	218	8	25							251
2001	218	7	23							248
2004	237	10	20							267
Total 1998-2004	673	25	68							766
2005	166	8	17							191
2006	96	5	13							114
2007	82	5	14							101
2008	91	5	15	24						135
2009	84	5	18	23						130
2010	76	3	18	24						121
2011	74	3	19	24						120
2012	80	3	20	20			0	86	135	344
2013	79	2	24	18			0	86	133	342
2014	74	2	19	18			0	75	126	314
2015	80	2	19	19	69	12	0	64	121	386
2016	80	2	18	18	70	6	0	65	117	376
2017	70	2	18	20	66	13	0	61	116	366
Total To-date	1805	72	300	208	205	31	0	437	748	3806

5.1.1.2 Data verification/audit administration

EDR data verification is required under EDR rules in 50 CFR 679 and 680. The rules state that “the DCA shall...” (680.6), or “NMFS, the DCA, or the DDCA will...” (679 subsections 65, 94, and 110) “conduct verification of information with [a person required to submit the applicable EDR or a designated representative]”. In the subsections that follow this *shall* direction to the DCA, the rules require the EDR submitter to respond to inquiries from the DCA within 20 days, require the submitter to provide supporting records to the DCA as requested, and authorize the DCA *auditor* to review the records for the purpose of substantiating values reported in the EDR.³⁷ The Council’s intent for the verification process, and of the third-party audit in that process, is not explicitly stated in the rule, and authorizes rather than directs that data verification is accomplished by auditor review of supporting records. In developing the data verification and audit procedures for PSMFC, AFSC has relied on the Council’s record of decision for guidance regarding intent. The Crab Rationalization Program RIR/IRFA (NMFS, 2004b) provides this background, and has been re-used in subsequent analyses for the other EDRs:

“Anticipated Enforcement of the Data Collection Program

³⁷ Under 680.2, “Auditor means an examiner employed by, or under contract to, the data collection agent to verify data submitted in an economic data report.” There is some inconsistency between the 679 and 680 rules pertaining to NMFS’ access to supporting records and roles of NMFS, the DCA, and the third-party auditor (DDCA) in verification audits; 680.6(f) states the clearest differentiation between the role of the DCA versus the DDCA, and PSMFC’s audit procedures have been developed by AFSC based on the 680.6 specification.

The analysts anticipate that enforcement of the data collection program will be different from enforcement programs used to ensure that accurate landings are reported. It is critical that landings data are reported in an accurate and timely manner, especially under an IFQ system, to properly monitor catch and remaining quota.

However, because it is unlikely that the economic data will be used for in-season management, it is anticipated that persons submitting the data will have an opportunity to correct omissions and errors before any enforcement action would be taken. Giving the person submitting data a chance to correct problems is considered important because of the complexities associated with generating these data. Only if the agency and the person submitting the data cannot reach a solution would the enforcement agency be contacted. The intent of this program is to ensure that accurate data are collected without being overly burdensome on industry for unintended errors.

A discussion of four scenarios will be presented to reflect the analysts understanding of how the enforcement program would function. The four scenarios are: 1) a case where no information is provided on a survey; 2) a case where partial information is provided; 3) a case where the agency has questions regarding the accuracy of the data that has been submitted; and 4) a case where a random “audit” to verify the data does not agree with data submitted in the survey.

In the first case, the person required to fill out the survey does not do so. In the second case, the person fills out some of the requested information, but the survey is incomplete. Under either case that person would be contacted by the agency collecting the data and asked to fulfill their obligation to provide the required information. If the problem is resolved and the requested data are provided, no other action would be taken. If that person does not comply with the request, the collecting agency would notify enforcement that the person is not complying with the requirement to provide the data. Enforcement would then use their discretion regarding the best method to achieve compliance. Those methods would likely include fines or loss of quota and could include criminal prosecution.

In the third case the person fills out all of the requested information, but the agency collecting the data, or the analysts using the data, have questions regarding some of the information provided. For example, this may occur when information provided by one company is much different than that provided by similar companies. These data would only be called into question when obvious differences are encountered. Should these cases arise, the agency collecting the data would request that the person providing the data double check the information. Any reporting errors could be corrected at that time. If the person submitting the data indicates that the data are accurate and the agency still has questions regarding the data, that firm’s data could be “audited”. It is anticipated that the review of data would be conducted by an accounting firm selected jointly by the agency and members of industry. Only when that firm refuses to comply with the collecting agencies attempts to verify the accuracy of the data would enforcement be contacted. Once contacted, enforcement would once again use their discretion on how to achieve compliance.

The fourth case would result when the “audit” reports different information than the survey. The “audit” procedure being contemplated is a verification protocol similar to that which was envisioned for use in the pollock data collection program developed by NMFS and Pacific States Marine Fisheries Commission (PSMFC). During the design of this process, input from certified public accountants was solicited in order to develop a verification process that is less costly and cumbersome than a typical “audit” procedure. That protocol involves using an accounting firm, agreed upon by the agency and industry, to conduct a random review of certain elements of the data provided.”

“Since some of the information requested in the surveys may not be maintained by companies and must be calculated, it is possible that differences between the “audited” data from financial statements and survey data may arise. In that case the person filling out the survey would be asked to show how their numbers were derived (footnote 41). If their explanation resolves the problem, there would be no further action needed. If questions remained, the agency would continue to work with the providers of the data. Only when an impasse is reached would enforcement be called upon to resolve the issue. It is hoped that this system would help to prevent abuse of the verification and enforcement authority.

In summary, members of the crab industry will be contacted and given the opportunity to explain and/or correct any problems with the data, that are not willful and intentional attempts to mislead, before enforcement actions are taken. Agency staff does not view enforcement of this program as they would a quota monitoring program. Because these data are not being collected in “real” time, there is the opportunity to resolve occasional problems as part of the data collection system. Development of a program that collects the best information possible to conduct analyses of the crab rationalization program, minimizes the burden on industry, and minimizes the need for enforcement actions are the goals of the data collection initiative.”

[...]

“Verification of data including auditing and error checking

The mandatory data collection program provides that verification of data, auditing, and error checking would be the primary responsibility of the third party agent. Consistent with procedures set forth in the motion, the agent will be obligated to develop an appropriate system for identifying outliers, incomplete data, or anomalies in the data submissions. Further, the third party agent will be obligated to retain qualified professional analysts or accountants to review data submissions and identify errors or flag possible fraudulent submissions.”

ASFC and PSMFC began developing data verification protocols and procedures for the Crab EDR in 2005 and have continued to improve and refine the process to efficiently identify and correct data reporting errors while reducing the cost and burden of the audit process. Prior to incorporation of EDR data into the AKFIN relational database in 2011, EDR data validation was largely reliant on the audit process. Automated validation routines now allow PSMFC to identify most errors and obtain corrections from submitters shortly after EDRs are submitted. AFSC developed revised audit selection and review protocols in 2017, which were used by PSMFC in the RFP for CPA firms to contract the audit review.

EDR data verification currently employs a series of validation procedures, including 1) primary, automated data validation procedures programmed and maintained by AKFIN on the EDR database, 2) secondary validation employing statistical procedures and visual inspection to identify data anomalies and statistical outliers, and 3) editing and imputation for data errors identified by data users that were not detected and corrected in primary and secondary validation.

Primary validation procedures involve programmed tests to identify logical errors and inconsistencies in individual EDR records, e.g., upper and lower bounds for reported values and ratios of values, crew missing data for one or more by-fishery EDR data fields where fishery participation is indicated in the EDR record or in catch accounting data. Primary routines are executed by PSMFC staff on each EDR record shortly after receiving a certified EDR submission, with follow-up contacts with submitters to obtain corrections as needed. Most primary validation errors are identified and corrected easily with a phone call and result in a re-certified EDR submission within 2 weeks of the submission.

Secondary validation begins after primary validation is completed and all EDR records are certified final by submitters. Once EDRs are completed, AKFIN completes integration of current year EDR records with other datasets, calculation of various pro-rata and statistical indices, and plotting for visual inspection. AFSC and PSMFC review the results to identify and flag visual outliers and anomalies as potential reporting errors. Flagged values are selected for correction through follow-up by PSMFC staff, or selection to third-party verification audit.

Audit protocols specified in the Scope of Work (SOW) for PSMFC's contract with EDR auditors require auditors to notify EDR submitters that have been selected for audit and to request appropriate supporting materials to enable auditors to substantiate reported values. After audit selections have been identified, and prior to the auditor distributing notices, ASFC and PSMFC consult with the auditor to determine the appropriate forms of supporting evidence and level of review appropriate for different types of data. For example, quota lease data tends to be more challenging to validate and requires a higher level of review compared to provisions costs. Once auditors have received the requested records, and/or with additional phone contacts, the auditors identify and confirm a correct value for the data item (either the original reported value or a corrected value). Auditors also evaluate the quality of supporting records and information provided by the submitter, and characterize the quality of support and nature of reporting errors using a coding system developed by AFSC and specified in the SOW.³⁸ Audit corrections are entered into the EDR database by PSMFC and AKFIN's production version of the EDR database is finalized after all audit results are entered.

As noted above, the data validation process and procedures have been implemented by AFSC and PSMFC based on interpretation of the Council's record of decision, and the third-party audit process has been modified as the process envisioned in the Council record has been implemented through alternative database management procedures that enable more timely and efficient error corrections at lower cost and burden to submitters.

Two issues that have emerged from the practical experience of AFSC and PSMFC in working with CPA firms under contract are especially worth noting: 1) in all audits reviews conducted since 2006, there has not been a single finding of intentional misreporting, or of any bias in the direction of reporting errors identified by auditors; and 2) verifying the quality of results produced by auditors requires considerable effort by AFSC and PSMFC. On the latter point, contracting for the services of CPA firms to conduct data validation audits is not straightforward, and the tasks involved are unfamiliar to CPAs and require one or two iterations to gain experience. However, CPA firms face staff turnovers and can't be relied upon to maintain staffing stability for EDR contracts, and PSMFC is required to issue RFPs to renew ongoing service every three years at minimum.

5.1.1.3 Program expenditures and cost recovery

This section describes the financial cost of implementing the EDR Program and identifies the extent of which those costs have been recovered from the fishing industry by the National Marine Fisheries Service. These costs are primarily borne by the AFSC and will be the main focus of this section, but the AKRO does also provide funds for the Crab Rationalization program and will be described in context. This section focuses on the cost recovery amounts rather than the full cost to the NMFS as in the years prior to cost recovery being implemented in the programs, NMFS did not calculate the in-kind contribution of staff time on EDRs until required to do so for cost recovery purposes.

The cost of running the EDR Program also includes the costs of the PSMFC and their subcontractors in their role as DCA, providing administrative support for the data collections, software development, web

³⁸ The SOW for the audit of 2017 Annual Crab EDR data is attached as Appendix B, and all audit reports posted on PSMFC's webpages for the four EDR programs, which can be reached through PSMFC's EDR Program page at: <http://www.psmfc.org/program/prog-2?pid=17>.

services, and database administration. FTE time provided by the AFSC includes oversight of PSMFCs work, performing additional data QA/QC, survey development and refinement, collaboration with AKRO staff on PRA clearance and publication of authorizing regulations, and associated public outreach (meetings, consultations and user support). AFSC also provides office space, computer equipment, and other administrative services.

In addition to cost recovery measures implemented by AKRO concurrently with rationalization of the crab and Central GOA rockfish fisheries and in 2000 in halibut and sablefish, new cost recovery requirements went into effect during 2016 for AFA pollock, Amendment 80, and all CDQ fisheries. The GOA Trawl fishery is not part of a catch share fishery and is therefore not subject to cost recovery. The costs reported for the GOA Trawl EDR only reflect the PSMFC administrative costs and do not include the costs of NMFS staff time, and therefore serve as a lower bound on the total cost of the GOA Trawl EDR.

Table 6 describes the annual cost recovery amounts for the three cost recovery eligible EDR fisheries and the PSMFC administrative costs for the GOA Trawl EDR. Note that the cost recovery amount for the Crab EDR is listed in the first year of the crab season, but is typically received and used by NMFS and PSMFC during the NMFS fiscal year that coincides with the second year of the crab season. The costs have been quite variable in the Crab EDR Program, which averaged \$286,013 over all years, and fluctuates largely due to changes in the cost of audits each year as well as the costs associated with database administration, support, and changes to the EDR forms. Costs have remained relatively stable in the A80 EDR, averaging \$90,733/year for the first three years of cost recovery (2016-2018). For the inshore sector of the A91 EDR, the only sector from which EDR Program costs are now recovered, costs have averaged \$57,260 per year since costs have been recovered since 2016. To approximate the cost of implementing the GOA Trawl EDR, the PSMFC administrative costs of implementing the GOA Trawl EDR are included, but have not included any NMFS staff time as these are not routinely documented for non-cost recoverable activities. These costs have averaged \$70,159 per year over the four years of the data collection, with costs varying largely due to changes in the need for audits.

Table 6 Cost Recovery and PSMFC Administrative costs of the EDR Programs

Program/ Year	Crab ¹	A80	AFA ²	Cost Recovery Total	GOA Trawl ³	Total EDR Cost
2005	\$ 150,000			\$150,000		\$150,000
2006	\$ 150,000			\$150,000		\$150,000
2007	\$ 259,938			\$259,938		\$259,938
2008	\$ 338,276			\$338,276		\$338,276
2009	\$ 314,303			\$314,303		\$314,303
2010	\$ 352,508			\$352,508		\$352,508
2011	\$ 323,588			\$323,588		\$323,588
2012	\$ 373,316			\$373,316		\$373,316
2013	\$ 318,278			\$318,278		\$318,278
2014	\$ 342,703			\$342,703		\$342,703
2015	\$ 269,583			\$269,583	\$ 53,771	\$323,354
2016	\$ 345,509	\$ 88,254	\$62,859	\$496,622	\$ 73,221	\$569,843
2017	\$ 180,168	\$ 91,482	\$69,369	\$341,019	\$ 91,879	\$432,898
2018		\$ 92,462	\$40,631		\$ 61,765	

¹ The year listed in this table reflects the first year of the crab fishing season.

² Only includes costs associated with the inshore sector.

³ Only includes PSMFC administrative costs.

While these costs are not insignificant, they represent a small fraction of the ex-vessel value generated by these fisheries (Table 7), with EDR-related costs averaging 0.15% of the ex-vessel value for the Crab EDR, 0.09% for the A80 EDR, 0.04% for the A91 EDR, and 0.10% for the GOA Trawl EDR. Ex-vessel values for the Crab EDR, A80 EDR, and A91 EDR come from the annual cost recovery reports, while the values for GOA Trawl represent their GOA Trawl related ex-vessel revenue for all vessels required to submit a GOA Trawl EDR and was calculated directly by AKFIN.

Table 7 EDR Program costs as share of fishery ex-vessel value

Program/Year	Crab ¹	A80	AFA ²	GOA Trawl ³
2005	0.11%			
2006	0.13%			
2007	0.13%			
2008	0.16%			
2009	0.21%			
2010	0.13%			
2011	0.11%			
2012	0.16%			
2013	0.15%			
2014	0.15%			
2015	0.12%			0.08%
2016	0.18%	0.10%	0.04%	0.11%
2017		0.08%	0.04%	0.13%

¹ The year listed in this table reflects the first year of the crab fishing season.

² Only includes the inshore sector.

³ Only includes PSMFC administrative costs.

However, the share of total cost recoverable costs associated with the EDR Program varies by each EDR as incremental costs associated with catch share programs vary by program as well. The Crab EDR represents on average approximately 9% of the total direct program costs which averaged \$3.4 million from the 2005/2006 fishing season through 2016/2017. The costs are slightly higher proportionally in the A80 EDR Program, averaging 19% of the \$584,541 average annual direct program costs for 2016 and 2017. The inshore A91 EDR represents over 29% of the average annual direct program cost of the inshore sector in the AFA program, which has averaged \$252,911 over 2016 and 2017. There is no comparable metric for comparison in the GOA Trawl fishery.

5.1.1.4 Estimated costs to industry of preparing and submitting EDRs

As noted in an earlier section, the Paperwork Reduction Act (PRA) was implemented in 1980 to reduce the total amount of paperwork burden the Federal Government imposes on private businesses and citizens and to establish a process through which Federal agencies must obtain approval from the Office of Management and Budget (OMB) before collecting information from the public. Under the PRA, NMFS is required to obtain approval for new information collection requirements implemented through Federal regulations and for voluntary requests for information. Voluntary requests include information collected through surveys or through other non-regulatory means, such as the Council’s requests for the submission of specific additional information in annual cooperative reports. NMFS also must apply for and receive approval from OMB for any revisions to existing information collection requirements that occur as a result of a change in Federal regulations or a change in a voluntary information request. When OMB approves an information collection, it assigns the collection an “OMB control number.” The OMB control number, expiration date of OMB’s approval, estimated burden hours, and other information must be displayed on all forms used to collect information.

The Alaska Region manages approximately 30 information collections ranging from collections for logbooks, catch and landings reports, scales and weighing, vessel monitoring systems, the Observer Program and electronic monitoring, EDRs, and each of the catch share programs. Together these 30 information collections include approximately 200 forms or components, most of which are required by

regulation. The Alaska Region PRA supporting statements and documentation of OMB approval are on the NOAA PRA Submission web page (http://www.cio.noaa.gov/services_programs/prasubs.html), listed by OMB collection number, title of the collection, and approval date.

Although the regulations implementing information collection requirements only change if revised or repealed by a final rule published in the Federal Register, OMB’s approval for each information collection expires every three years. Prior to the expiration date of each collection, NMFS must submit a request to OMB for approval to continue to collect the information. Table 8 provides the OMB collection numbers and expiration dates for the four Alaska EDR programs.

Table 8 Office of Management and Budget (OMB) Information Collections for the Alaska Economic Data Reports.

Name of Information Collection	OMB Information Collection Number	Regulatory Citation	OMB Approval Expires
Crab EDR	0648-0518	50 CFR 680.6	7/31/2019
Amendment 80 and GOA trawl CP EDR	0648-0564	50 CFR 679.94	12/31/2020
GOA trawl EDR (CV and processors)	0648-0700	50 CFR 679.110	12/31/2020
BS Chinook salmon bycatch EDR	0648-0633	50 CFR 679.65	6/30/2021

To obtain approval from OMB for a new, revised, or expiring information collection, NMFS must prepare and submit two *Federal Register* notices and an application package that consists of an analysis called a “supporting statement,” a summary form (OMB form 83-I), and copies of all forms and instructions associated with the information collection. The supporting statement describes the information collection requirements, explains why the information should be collected or continue to be collected, estimates the number of respondents and the cost to respondents of submitting the information, explains whether and how confidentiality is protected, summarizes and responds to any public comments on the information collection, and addresses a number of other related questions. The costs that are required to be included in a supporting statement include the costs of the time that it takes to review instructions, search existing data sources, gather and maintain the data needed, review the information to be submitted, and submit the information.

Prior to the expiration date of an information collection, NMFS issues two notices in the *Federal Register* to solicit public comment on the information collection requirements. For example, OMB’s approval for the crab EDR collection expires on July 31, 2019. A notice was published in the *Federal Register* on March 7, 2019 ([84 FR 8308](#)) soliciting comments on renewal of approval for this information collection. This notice requests comments on any aspect of the information collection, but specifically requests comments on whether the information collection is necessary, whether the data collected has “practical utility,” the accuracy of the estimated burden hours and costs, and ways to improve collection or minimize its burden. The second *Federal Register* notice will be published after NMFS submits the draft renewal package to OMB. All notices soliciting comments on information collection renewals are posted on NMFS’s website. NMFS responds to comments received on the information collection requirements in the supporting statement submitted to OMB.

Table 9 summarizes the estimated hours and costs to industry of preparing and submitting each form or information collection component of the four Alaska EDRs. The table provides the estimated annual

number of respondents for each form or component each year, the estimated time it takes a respondent to prepare and submit the required information, the estimated cost per hour for preparing and submitting each response, the estimated annual cost per respondent, and the estimated annual total labor cost for all respondents. The rows title “Total for Collection” show the estimated annual total labor cost of submitting the required EDR information for each of the four EDR programs. For example, NMFS estimates that it costs approximately \$312,000 per year for respondents to provide the information required for the crab EDR; approximately \$19,000 per year for the Amendment 80 and GOA trawl catcher/processor EDR, approximately \$48,000 per year for the GOA trawl catcher vessel and processors EDR, and approximately \$60,000 per year for the BS Chinook salmon bycatch EDR. The total estimated cost for all of the EDRs is \$439,504. These are the cost estimates for preparing, reviewing, and submitting the required information and are in addition to the EDR administrative costs described in Section 5.1.1.3, some of which are recovered from the industry through cost recovery.

Table 9 Estimated Number of Respondents and Costs to Prepare and Submit Alaska Economic Data Reports.

Name of EDR Program or Submission	Number of respondents per year	Hours per response	Estimated Cost Per Submission and in Total		
			Cost per hour for respondent	Cost per respondent	Total labor costs of submission
Crab EDR					
Catcher vessels	70 – full EDR	20	\$165 ^{1/}	\$3,300	\$231,000
	1 – cert. only ^{2/}	1	\$165	\$165	\$165
Catcher/processors	2 – full EDR	20	\$165	\$3,300	\$6,600
Processors	18 – full EDR	16	\$165	\$2,640	\$47,520
	4 – cert. only	1	\$165	\$165	\$660
Verification/audit	16 CVs 0 CPs	8	\$165	\$1,320	\$21,120
	4 processors				\$5,280
Total for Collection	95				\$312,345
Amendment 80 and GOA Trawl Catcher/Processors					
Annual EDR	21 – full EDR	22	\$37 ^{3/}	\$814	\$17,094
	6 – cert. only	1	\$37	\$37	\$222
Verification/audit	8	5	\$37	\$185	\$1,480
Total for Collection	27				\$18,796
Gulf of Alaska Trawl EDR for Trawl Catcher Vessels and Shoreside Processors Taking Deliveries from Trawl CVs					
Catcher vessels	67 – full EDR	15	\$37	\$555	\$37,185
	34 – cert. only	1	\$37	\$37	\$1,258
Processors	13 – full EDR	15	\$37	\$555	\$7,215
Verification/audit	10 CVs	4	\$37	\$148	\$1,480
	5 processors	5	\$37	\$185	\$925
Total for Collection	114				\$48,063
BS Chinook Salmon EDR					
Annual Compensated Transfer Report	0 – transfer rpt	40	\$75 ^{4/}	\$3,000	\$0
	96 – cert. only	1	\$75	\$75	\$7,200
	0 – verification/audit	4	\$75	\$300	\$0
Vessel Fuel Survey	61	4	\$75	\$300	\$18,300
Vessel Master Survey	116	4	\$75	\$300	\$34,800
Total for Collection					\$60,300
TOTAL for all EDRs					\$439,504

^{1/} Estimated cost per hour of an accountant hired to prepare the crab EDRs and information requested for the verification process.

^{2/} Respondent submitted only the certification page indicating that they were not required to complete the full EDR that year.

^{3/} Standard baseline assumption of cost per hour for most of the Alaska Region's information collection components.

^{4/} Cost per hour estimate from the original supporting statement for the BS Chinook Salmon EDR final rule, assuming a higher average cost per hour for submissions made by vessel owner or operators.

The estimates of time burden and cost per hour in Table 9 represent the estimates used in the most recent PRA supporting statements or updates generated since then through ongoing operation of the program. NMFS solicits comments on these burden hour estimates and cost estimates in the proposed rule for the information collection requirement and again in each 3-year renewal. If specific comments are received on the burden hour or cost estimates, NMFS generally adjusts the estimates in the specific collection.

Table 9 shows a fairly wide range of hourly cost estimates among the EDR programs. The \$37 per hour estimate is an average hourly cost estimate used for forms and components in most of NMFS' information collections. This estimate is based on the assumption that information is being submitted by operators of small vessels or administrative or management staff in processing plants or fishing companies, and the closest average compensation for Federal Government employees of comparable responsibility and compensation. This estimate has not been systematically validated through surveys and has not been updated in several years. The estimates of \$165 per hour for the crab EDR and \$75 per hour for the A91 EDR are based on comments received on past EDR renewals that explained of the type of expertise needed to complete these particular EDRs and provided the associated costs per hour for people with this expertise. As stated earlier, NMFS presents its burden hour and hourly cost estimates for public comment and generally updates and revises them if it receives information that supports doing so.

NMFS is considering conducting a more comprehensive review of the burden hours and costs per hour for all of its Alaska Region information collections; however, this project likely would require a survey of industry and competes for time and resources with the Sustainable Fisheries Division's other management, analytical, and operational responsibilities and has, to date, not been undertaken. NMFS welcomes the Council's and industry's input on the need and priority for improving estimates of the costs of information collection requirements.

NMFS sometimes identifies that a component of an information collection required by regulation is no longer necessary, through either staff analysis of the information collection or as a result of a comment received from the industry on the collection. When this occurs as a result of a comment, NMFS responds accordingly in the supporting statement. If NMFS agrees with the comment, NMFS follows up by recommending a regulatory amendment to revise or remove the requirement, and, if the Council agrees, by proceeding with that regulatory amendment. Two recent examples of proposals to remove information collection requirements that were identified through the PRA renewal process are the BS pollock inshore cooperative weekly catch report and the VMS registration fax/form. If NMFS does not agree with a comment that an information collection or component of a collection is not necessary, NMFS responds in the supporting statement by restating the original justification for the information collection requirement from the rulemaking that implemented the requirement, with additional explanation and justification, as appropriate. Generally, OMB accepts NMFS's explanation and rationale for the continued need for the information collection or component, although they may ask follow-up questions or require additional justification.

5.2 Limitations of EDR data

Limitations of the EDR Program span a range of issues, and include limitations on the quality and utility of the data collected in the current respective EDR forms that arise from the conceptual design of the data collections, to challenges in making the data that has been collected more readily accessible to analysts,

more salient to the analytical applications intended by the Council, and more informative to the public. A legitimate concern of the Council, as well as to industry and to EDR Program staff, is the relatively limited use and utility EDR data have demonstrated, relative to Council expectations regarding frequent and informative applications of the data. Given the expenditure of administrative and industry cost and reporting burden incurred, the quality and utility of some portions of the EDR data collections are in need of further consideration. The following provides a discussion of data quality limitations of data currently collected in EDR forms, followed by a broader discussion of limitations associated with the overall design of data collection in the EDR Program as a whole.

5.2.1 Data quality limitations in current EDR data collection

5.2.1.1 Crab EDR

Crab CV EDR: Crab IFQ cost reporting in CV and CP forms shows indications that multi-vessel owners may pool quota costs across vessels, in some cases for the purpose of balancing crew share earnings to account for vessels incurring higher quota and/or fuel costs associated with northern deliveries. This conflicts with the EDR form instructions, and complicates validation of reported quota values. This may be a case in which collecting annual-level quota lease costs at the vessel-level, by CR fishery and quota type sufficiently diminishes data quality, in that vessel-level annual lease cost values are pooled over all distinct lease arrangements at the vessel level; collecting quota transaction data from QS owners could improve the calculation of reliable quota market activity statistics, including lease rates.

Crab Processor EDR: Processing labor data collection in the EDR form currently collects hours and labor cost by CR fishery, which misses overtime hours as an important determinant of hourly earnings and total wage rates, and is a relevant indicator of labor productivity. Also, crab processing labor is collected by CR fishery, compared to GOA Trawl processors, where it is collected by month and housing status. The reasons for inconsistency are unclear, but utility of the data would increase if collected consistently across fisheries.

5.2.1.2 Amendment 80 EDR

The A80 EDR provides a comprehensive set of cost and earnings data that supports the Council's objectives for the data collection without excessive reporting burden. Some variables, including vessel activity days and processing line throughput capacity are somewhat duplicative and may not be the best source of data for their purposes. The collection of capital expenditure data in the EDR form aggregates major, unique investment events (vessel purchase acquisitions and/or retrofits) which should be differentiated from ordinary capital improvement cycle expenditures. This can be resolved by consulting with the submitter, but as a general matter, improved methods for collecting capital investment data that are large and infrequent could be explored.

5.2.1.3 Amendment 91 EDR

AFSC has reported to the Council on the implementation of the Amendment 91 EDR previously. The concerns with the 91 EDR are:

Administration: The A91 EDR is more complicated to administer than other EDRs and yields minimal data for the expense and burden. The fuel survey component was designed to complement logbook data measurement identifying salmon avoidance movements of vessels, which have not been effectively implemented, and given conversations with vessel operators, do not adequately quantify vessels' salmon avoidance travel costs. It was designed for a narrow set of analytical applications, rather than to yield general purpose economic data. As a result, EDR data was not used in the AFA program review. The A91 EDR as a whole could produce data of much greater utility for the same or less cost and burden if revised.

A91 Vessel Master Survey: Well-considered, detailed answers are reported in the survey and are informative, but an increasing proportion of answers are pro-forma (verbatim duplicates of other responses) and are not likely to provide much utility as an ongoing information collection. The qualitative

response data requires time-consuming coding in order to analyze quantitatively, but results of formal analysis are impaired by data quality. Changes in the timing and implementation of the survey, including fielding the survey in-season or immediately post-season, direct reporting by skippers to NMFS, and revising the survey content, could improve the data quality. These changes may increase cost and burden, however, and would be difficult to implement within the current structure of the A91 EDR.

Compensated Transfer Report (CTR): A compensated transfer is defined in the CTR form as one in which Chinook salmon PSC is transferred between entities in exchange for monetary compensation, with or without the exchange of any other assets (pollock quota) included in the exchange. The CTR form requires that such a transfer be reported, identifying the quantity of PSC, the monetary amount exchanged, and a Y/N question indicating whether other assets were exchanged. The purpose of the latter is to ensure that any bundled transfer pollock quota and PSC reported in the CTR does not identify the quantity of pollock quota and reveal a per-unit price. However, the Council may wish to reconsider the rationale for this approach as tracking quota lease prices in the AFA pollock fishery would provide an informative statistic of the expected short-term profitability in the fishery (Holland et al. 2015), and may be of interest to the Council to monitor as they consider broader changes to the EDR program or assess the impact on the fishery if Chinook avoidance costs increase. As such, the design of the CTR form limits the quality of the data. The CTR form has never been completed by a submitter, and industry has reported that the IPA's essentially prohibit "compensated transfers". All AFA vessel owners and entity representative are required under the A91 EDR rule to complete a certification statement indicating that they did not participate in a compensated transfer.

Fuel survey: The A91 fuel survey collects four items of data. These are: hourly fuel consumption - a) steaming, and b) towing, and annual fuel quantity and costs. Hourly rate data is largely estimated, and in some cases is the daily fuel cost quoted for charter rates, divided by 24. As a result, the fuel rate data is accurate to a degree, annual fuel expenditures are accurate to a higher degree, and although neither are subject to verification audit, collectively represent the best scientific information available on the operating costs of AFA pollock vessels.

5.2.1.4 GOA Trawl EDR

Trawl CV EDR: The reporting of non-labor vessel cost data in the CV EDR is limited, and is inconsistent with the structure employed in other EDRs. Despite the Council's stated intent in implementing the GOA EDR to use components from other EDRs that have demonstrated utility and quality, the specifications of two of three non-labor cost elements in the CV form are unique: annual trawl gear cost is reported as inclusive of all expenditures, including expensed items and capitalized purchases; annual expenditures on salmon and halibut excluder gear is also combined over expensed and capitalized purchases, and is not collected in any other EDR.

Trawl Processor EDR: As noted above, the GOA processor EDR collects processing labor data as: number of employees by month, and labor hours and gross pay, by month and housed/not housed. This has two potentially important limitations: 1) regular and overtime hours should be reported separately in order to control for the relative effect of overtime premiums on average labor cost, and 2) the different stratification applied to employee counts compared to labor hours and pay limits the ability to identify the number of housed and non-housed employees; the employment data should be differentiated by housing status, consistent with labor hours and pay. The collection of monthly water and electrical utility consumption by processing plants is of some concern as well. The data are not generalizable as the variables only apply to Kodiak plants, and do not adequately capture energy and water costs to plants that are not fully dependent on municipal utility supply. The narrow scope of this data as currently collected may be more suited to an administrative reporting requirement than an EDR.

5.2.1.5 Usability

Assessing the utility and useability of EDR data requires a consideration of the context in which the data are (or aren't) being used. To varying degrees, the EDRs were designed by the Council to support assessment of particular effects of management measures, as in the case of the A91 EDR. The useability of the EDR data collections in regard to specific applications intended by the Council is separate from the broader consideration of utility and useability of the data collections to support more general analyses, for example, in ongoing assessment of the status of the Council's social and economic objectives described in the FMPs, or to providing a common set of economic performance metrics that are generally applicable to industry sectors.

An important limitation on the use of EDR data for specific applications is the frequency with which the particular management issues are taken up for consideration by the Council. For example, the Council's intent in initiating the GOA Trawl CV and processor EDRs was to establish a baseline of economic data for use in analyzing the effects of a change to catch-share management. Notwithstanding the suspension of GOA rationalization, the intent of the Council was to use the EDR to accumulate a set of baseline measurements, against which later measurements collected after a management change could be compared. The GOA EDR has captured a set of baseline measurements for the few variables that it collects, and may continue to accumulate a longer baseline of the same data. The useability of these data for this intended purpose is uncertain, however, given that the envisioned management transition has not occurred. In addition, the narrow range of variables collected in the CV and processor EDRs poses the risk of not effectively capturing the dimensions of economic change that are most significantly affected as a result of management changes. As the EDR was designed to be implemented on a fast track before an impending catch share program, revisiting the design of the data collection under less time constraint would likely produce a data collection of more general utility, if that is desired by the Council.

The broader issue of useability of EDR data is primarily limited by the fragmentary nature of the various data collection forms. As illustrated in Table 3, there are only a small subset of variables that are somewhat consistently collected across the EDRs, e.g., harvesting and processing labor costs, crew identifiers, and fuel costs. Most of the rest of the variables collected are unique to a particular EDR form. Apart from the more fundamental limitations of not having general purpose EDRs that are administered consistently at the sector-level, the fragmentary nature of the distinct sets of variables collected in the current EDRs, and the distinctions between EDRs in the way a given variable is measured, e.g., fuel cost, substantially limits the utility of the data, particularly in the context of Council analyses. The ability of analysts to produce informative analysis requires familiarity with the base of readily available data. Although EDR data are available to analysts through AKFIN, the fragmented information provided by EDRs limit the potential for analysts to become sufficiently familiar with the data to enable general usefulness. To make this more concrete: Council staff, and to a lesser degree AKRO analytical staff, rely primarily on AKFIN as a centralized data source, and particularly on AKFIN's "comprehensive" data tables. The comprehensive tables are integrations of the primary fisheries administrative and monitoring data systems (e.g., fish tickets, COAR, DPR, NORPAC) developed by AKFIN to allow efficient selection and summarization of relevant data records for analytical applications by agency staff. Existing EDR datasets are not suitable for this approach due to the inconsistencies in the design of respective EDR forms. In order for staff analysts to make ready use and application of cost, employment and other EDR data requires that a consistent base of information is available across most or all industry sectors be undertaken, that the data is structured to integrate into the existing data system efficiently, and that sufficient time and access to the data are provided to allow development of routine analytical processes.

The unique confidentiality protocols that apply to EDR data records also impose limitations on the useability of the data. The designated Data Collection Agent and "blind-data" protocol, and the "rule-of-5" aggregation standard, are unique to EDR data, and were introduced by the Council to apply a higher standard of confidential data protection to the cost data and other proprietary business information collected in EDRs. Apart from the particular implications of each element on useability and access to

EDR data discussed below, these requirements are an additional aspect of the inconsistency of EDR data that impedes regular use by Council and NMFS analysts. Analysts' use of EDR data involves increased material and perceived risk of inadvertently disclosing confidential data. This has likely resulted in avoidance of using EDR data in cases where it may have been the best information available, but alternatives with lower risk and complexity were chosen for the sake of timeliness.

The "rule-of-5" aggregation standard specifies that a minimum of five distinct EDR records is required for public release of aggregated statistics and tabular summaries derived from EDR records. This is in contrast to the "rule-of-three" standard applied to other confidential commercial fisheries data under NMFS and Council reciprocal access agreements and MOAs with ADFG and CFEC, and respective agency administrative rules concerning confidential data.³⁹ After consulting with ADF&G and AKRO staff, the rule-of-5 was proposed by AFSC in 2006 in response to a Council request for confidentiality and data quality standards for use of Crab EDR data. The Council recommended the rule-of-5 as a guideline rather than a formal requirement implemented in EDR rules, and AFSC has subsequently applied this standard to all public release of statistical summaries using any EDR program data.

The small number of vessel and processor entities represented in EDR records, particularly in CR crab fisheries, requires confidential data suppression of significant portions of the data collected in EDRs. In particular, the small number of crab processors providing custom crab processing services prevents release of data reported in the Crab Processor EDR form for custom processing service fees paid by buyers and revenue received by custom process providers. This represents a substantial fraction of the data reported in the crab processor EDR. Applying a rule-of-three standard would allow reporting of custom processing data to some extent, but in many cases, there are only one or two providers within a given crab fishery. The rule-of-5 also requires data suppression for cost and employment data in smaller crab fisheries that would otherwise be publishable under a rule-of-3. It is also notable that, in the potential event of Chinook salmon PSC transfers that would be subject to reporting in the A91 CTR form, application of the rule-of-5 would potentially be quite complicated and could prevent release of information on compensated transfers to the Council or public.

The DCA/blind-data rule requires the collection of EDR forms to be performed by a third-party DCA (PSMFC), and requires removal of unique identifiers (e.g., vessel identifiers, permit numbers) from EDR data records accessible to Council and agency staff. However, the Council only required this for Crab EDR and GOA CV and processor EDR data. The blind data rule was considered when developing the A80 and A91 EDRs, but was not included in the preferred alternatives for those EDRs. The blind-data requirement introduces significant administrative challenges for AFSC's oversight and management of the EDR program in collaboration with PSMFC because AFSC staff responsible for oversight of data verification and validation processes are prohibited from access to identifying information. This has substantially impeded timely completion of verification audits and production of economic SAFE reports on some occasions. In contrast, the DCA/blind data rules in 679.110 and 680.6 do not prohibit PSMFC from authorizing subcontractors to access identifiers in EDR records (subject to nondisclosure agreements). This is necessary for some IT application and database development for EDRs performed for PSMFC under contract. In principle, this would not prohibit release of EDR microdata containing identifiers to individuals contracted and authorized to perform research and analyses using EDR data, but PSMFC and AFSC have consistently applied the blind-data protocol for all EDR data released to contractors authorized for such purposes.

³⁹ See Confidentiality Of Fisheries Information, Divisional Operating Procedure (DOP) CF-008, ADF&G Division of Commercial Fisheries. <https://www.admin.adfg.state.ak.us/confluence/display/CCFI/Confidentiality+DOP>.

5.3 Applications of EDR data in analyses

Despite numerous limitations, the EDRs together provide considerable valuable insights into the economic behavior of the fishing industry. While there have been a number of specific valuable applications, the EDRs have also given analysts who use the data a deeper understanding of the diversity within and across fleets. For example, from the Chinook salmon EDR skipper survey, it is clear that the pollock fishery is balancing a complex range of management challenges. Having a census of all skippers reveals that different fishers have very different experiences in any given year, and that features such as the extent of sea ice varies considerably and impact fishing choices and the difficulty of avoiding Chinook salmon bycatch. In addition, all of the EDRs provide insights into the differences across the vessels in the fleets they represent. This illustrates that some vessels may be much more flexible at moving in response to changing target and bycatch encounter rates. This section describes some of the analyses that have been completed, are presently underway, and/or are continuing to be conducted using EDR data.

5.3.1 EDR Data Annual Reporting

To assess the performance of the Amendment 80 fleet under the rationalization program and subsequent changes in fishery management economists and analysts at the AFSC use the Amendment 80 EDR data collection to prepare an annual summary report that is included as a chapter to the annual publication the Economic Status of the Groundfish Fisheries off Alaska. The summary reports statistics that are intended to indicate trends in a variety of economic indicators and metrics. The reported statistics provide a general overview of fishery performance over time, and are not intended as a rigorous statistical analysis of specific hypotheses regarding economic efficiency or other performance metrics. These generally include changes in the physical characteristics of the participating vessel stock, including productive capacity of vessel physical plant (freezer and processing line capacity and maximum potential throughput) and fuel consumption rates, efficiency and diversification of processing output, investment in vessel capital improvements, operational costs incurred for fishing and processing in the Amendment 80 fisheries and elsewhere, and employment and compensation of vessel crews and processing employees.

In addition to the Amendment 80 EDR annual report, economists and analysts at the AFSC also prepare an annual summary of the crab EDR data collection. The crab annual summary is prepared as the Economic Status of the BSAI King and Tanner Crab Fisheries off Alaska (Garber-Yonts and Lee, 2018). This report presents information on economic activity in commercial crab fisheries currently managed under the Federal FMP for Bering Sea and Aleutian Islands King and Tanner Crab (with attention to the subset of fisheries included in the Crab Rationalization Program). Statistics on harvesting and processing activity; effort; revenue; labor employment and compensation; operational costs; and quota ownership, usage and disposition among participants in the fisheries are provided. Additionally, this report provides a summary of BSAI crab-related research being undertaken by the Economic and Social Sciences Research Program (ESSRP) at the AFSC.

5.3.2 Council program reviews

The MSA requires a formal and detailed review of Limited Access Privilege Programs 5 years after the implementation of the program, and thereafter to coincide with scheduled Council review of the relevant fishery management plan (but no less frequently than once every 7 years). The Crab Rationalization Program has had three-year, five-year and 10-year program reviews prepared thus far. Both the 5-year and 10-year crab program reviews relied on EDR data to document fleet performance with regard to quota usage and leasing, effort levels, vessel operating costs, gross and net earnings, crew participation and crew earnings. This information is also used to document changes in crew employment and compensation and state of residency of crew. Processing labor, employment, and wages are also assessed using EDR data.

The 10-year crab program review also contained a Social Impact Assessment (SIA) as an appendix to the review. The SIA utilizes EDR data along with other data sources to provide, within the bounds of data

confidentiality constraints, a quantitative participation description by community, including harvest trends by crab fishery, local community fleet participation, catcher vessel crab harvest volume and value by community, community processor participation, processor volume and value by community by share type, and quota share distribution by community for Alaska, Washington, Oregon, and other U.S. states combined. The 10-year Crab Rationalization Program review also summarizes the social impacts of crab rationalization by community, including discussions of vessel participation, catcher vessel owner shareholdings, crew participation, catcher vessel crew shareholdings, locally operating processors, support services, and local governance and revenues.

In 2017, a program review was conducted for the Central GOA Rockfish Program. This program review also included an SIA that made extensive use of EDR data by developing cross-walk tables for catcher vessel ownership address community and community of residence of crew on those vessels, along with payments to labor information, which gave a look at the “employment footprint of the fishery” in a way that could not be done without EDR data. This analysis showed some interesting patterns across communities and regions. Data were also presented on shore-based processing labor hours and payments to labor by processing crew members housed and not housed by their employer. This analysis also made use of the data on types of crew positions and payments to labor for relevant catcher/processor entities.

The Amendment 80 program 5-year review was completed in 2014 (Northern Economics, 2014). The review provides an overview of the EDR data collected and uses the data to summarize expenses and revenues fleet wide. Operating expenses, including payments to labor, are documented and the EDR data is used to develop a cash flow model. The Amendment 80 5-year review does not contain a social impact assessment.

5.3.3 Use of EDR Data in Analyses

Council staff, NMFS staff, contractors, and academic partners have used EDR data, both from published reports and custom queries, in several important ways. As mentioned above, EDR data have been used extensively in catch share program reviews. In addition, it has been used in several regulatory action analyses, such as for analyzing crew employment in the 2014 Final Environmental Impact Statement: Steller Sea Lion Protection Measures for Groundfish Fisheries in the Bering Sea and Aleutian Islands Management Area. EDR data was also used in analyses of regulatory actions affecting the Amendment 80 fleet and is currently being used in a regulatory impact review of allowing deck sorting of halibut in non-pollock groundfish trawl fisheries (NMFS, 2019 in process).

EDR data have also been utilized in projects related to groundfish and crab stock assessments. Cost and production data from crab EDRs were used to parameterize bioeconomic models to evaluate effects of uncertainty buffers for catch projections (Punt et al. (2012), to parameterize cost and production functions in bioeconomic models to evaluate long-term effects of ocean acidification on Bristol Bay red king crab (Punt et al. 2014, Seung et al. 2015), and Eastern Bering Sea Tanner crab (Punt et al. 2016). In addition, cost and production data from crab EDRs will be used to parameterize cost and production functions in the joint snow-Tanner crab bioeconomic model under development.

EDR data have also been used in several journal articles and/or technical memos that evaluate fishery productivity and efficiency changes (Walden et. al. 2014, Fissel et. al. 2015, Thunberg et. al. 2015), and in an analysis measuring the multiregional economic contribution of an Alaska fishing fleet with linkages to international markets (Waters et al., 2014). EDR data was used in an evaluation of economic impacts of marine reserves in (Reimer and Haynie, 2018) and to calibrate a model that was used to explore the sources of rents generated from ITQs (Reimer et al. 2014). Further, the Amendment 80 EDR data are currently being used in an NPRB Project with Principal Investigators Matthew Reimer, Joshua Abbott, and Alan Haynie. Amendment 91 Chinook salmon EDR data are also being used in several manuscripts that are currently in peer review.

Several recent Council action analyses have used EDR data. The 2016 GOA trawl bycatch management analysis included an SIA that made extensive use of EDR data. In addition, EDR data was used in the recently completed (3/8/19) analysis titled BSAI Final Review Draft Social Impact Assessment: Catcher/Processor Mothership Restrictions in the Bering Sea and Aleutian Islands and the Gulf of Alaska when taking Directed Non-CDQ Pacific Cod Deliveries from Trawl Catcher Vessels. However, in this case, complete data was not available for any of the different sectors involved and no EDR data was available for some of the sectors involved. This action was essentially an allocation (or reallocation) between sectors and it would not be acceptable to present detailed data on one sector and not another. To overcome this limitation, the analysts used some of the crew residence data for catcher vessels that filled out a GOA EDR and worked both in the GOA and the BSAI, with important caveats, as a work around solution.

In addition to the use of EDR data in analysis identified above, several data evaluation reports have been developed. These include the following:

- Bering Sea/Aleutian Island Crab Economic Data Report Center for Independent Experts Review August, 2011
(https://www.afsc.noaa.gov/REFM/Socioeconomics/PDFs/CIE%20review%20reports/2011_11%20Anderson%20BSAI%20economic%20data%20collection%20meeting%20report.pdf)
- Amendment 91 AFA Chinook Salmon EDR Validation Reports, 2013 and 2014: PSMFC,
<https://www.psmfc.org/chinookedr/>
- Amendment 80 Annual Economic Data Report Validation Audit Reports, 2008-2016, PSMFC,
<http://www.psmfc.org/goatrawl/index.html>
- BSAI Crab Annual Economic Data Report Validation Audit Reports, 1998-2016, PSMFC,
http://www.psmfc.org/alaska_crab/

5.3.4 Analyst Feedback

Analysts from the Council staff, NMFS staff, and contractors who have potentially used EDR provided some useful feedback on the EDR collections. In cases where EDR data was not used in analyses where it may have been helpful, analysts may not have full access to the data or feel that they do not have the familiarity and/or technical skills to access the data without assistance. Further, it has been reported by analysts that the technical aspects of using EDR data necessitates advanced planning to obtain assistance with the data access and management tasks and the economic analysis skills needed to use the EDR data. Analysts have also indicated in some cases the alternatives to be analyzed in a council action are not always directly informed by the EDR data currently collected.

Analysts described several areas of additional data collection they would like to have included in the future. These include the following suggestions:

- The Council conducts (contracts) AFA Program Reviews; however, there are no EDR data for the pollock fishery.
- Collect variable and fixed cost data that would allow assessment of profitability in each fishery.
- Collect crew license numbers for all harvesting crew.
- Collect information on the payments to processing crew by their home address for groundfish and crab fisheries.
- Collect a description of how inputs to the production process are acquired by plants and vessels. For example, are they purchased locally or from vendors outside the community where the fishing and/or processing is based and is there a consistent pattern of how the flow varies by input type?
- Collect information for all fisheries a vessel participates in. For example, some (but not all) of the A80 vessels fish in the GOA, and there seemed to be some uncertainty as to whether those boats

were required to summarize their GOA activity, or if they should summarize their GOA Activity separately. In any case it doesn't seem like the EDR recognized that some A80 vessels participate in other fisheries.

- The Crab EDR doesn't acknowledge or account for participation in other fisheries. For the Crab EDRs or any EDR to be of good value the forms need to acknowledge participation in other fisheries and be specific in the questions as to whether or not the respondent should include data from those other fisheries.
- At present we don't all have a complete picture of what may be available to analysts via queries versus the reports appended to the SAFE documents.
- Collecting data that are consistent (in terms of the variables collected), available in an easily accessible format, and comparable across all like sectors would be useful. Accomplishing this would require adding some sectors to the data collection process and perhaps decreasing the level of detail currently collected from other sectors.
- Improve access to EDR data to researchers that are not NMFS or NPFMC employees.

6 EDR Program Assessment and Recommendations

6.1 Short(er) term, practical recommendations to:

- Reduce costs and burden
 - Eliminate routine third-party data verification audits and limit the audit requirement to instances of gross noncompliance with EDR submission requirements or where intentional strategic misreporting is indicated or suspected. NMFS will continue to research the degree of flexibility we have to minimize requirements under existing regulations, and which types of modifications will require FMP and regulatory amendments to implement.
 - Review duplication of reporting requirements in EDR Program.
- Improve data utility by streamlining data access
 - Re-assess EDR-specific data protocols to improve utility and efficiency while maintaining confidential data protections: specify blind-data rule on the basis of a) analytical users, and b) EDR administration users, and reconsider rule-of-5 aggregation standard.

6.2 Long(er) term, recommendations to improve economic data collection processes:

- Develop a systematic approach to identifying and prioritizing the Council's needs for economic and social science information. This includes identifying relevant analytical and performance metrics, minimum requirements for accuracy and precision of information outputs, and a framework for balancing tradeoffs between all relevant dimensions of information quality and system costs.
 - Review survey population and survey frequency for EDR variables and consider survey administration alternatives, including changes in the method, frequency, and respondent population of data collections to achieve the Council's analytical objectives.
 - Improve application of National Standard 2 Guidelines to information *processes* in EDR program oversight and ensure clearer distinctions between *scientific information* from other information content.
 - Minimize disincentives for voluntary industry cooperation with data collection efforts and address concerns regarding confidentiality, cumulative reporting burden, and negative consequences of revealing profitability and other financial information to the federal government.

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Appendix A – FMP and Regulations

Fishery Management Plan and Federal Regulations for Economic Data Collection Programs or Economic Data Reporting Requirements

Text below in *italics* are excerpts from the fishery management plans.

Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (crab FMP)

Requirements for the Crab Rationalization Program Economic Data Collection are in Chapter 11, Section 14 of the crab FMP. These requirements were elements of the Crab Rationalization Program, which was added to the crab FMP in 2004 through Amendment 18. These requirements were revised in 2013 through Amendment 42 to the crab FMP. The current text of the crab FMP for the Economic Data Collection Program and requirements are reproduced below:

14. *Data Collection Program*

The Crab Rationalization Program includes a mandatory economic data collection program which requires owners or leaseholders of catcher vessels, catcher/processors, shoreside crab processors, and stationary floating crab processors, as well as PQS holders that purchase crab deliveries, in the BSAI crab fisheries to submit an economic data report (EDR) on an annual basis. The purpose of the EDR is to collect cost, revenue, ownership, and employment data to provide the Council and NMFS with the information necessary to study the impacts of the Crab Rationalization Program. Participation is mandatory.

14.1 *Purpose*

This data collection effort is required to address the Council's original problem statement for the Crab Rationalization Program. That problem statement requires a structure that achieves "equity between the harvesting and processing sectors" and "...economic stability for harvesters, processors and coastal communities." The Council revised the data collection program in 2012 to improve the quality of data collected and eliminate redundancies with other collections of data.

The data collected is intended to aid the Council and NMFS in assessing the efficacy of the Crab Rationalization Program and to determine its relative impact on fishery participants and communities. The collected data may assist with the development of amendments to the Crab Rationalization Program or could be used to analyze the economic and social impacts of future FMP amendments on industry, regions, and localities.

14.2 *Collection of Data*

The EDR is administered by NMFS through contracts with Pacific States Marine Fisheries Commission (PSMFC), an independent third-party data collection agent. Each owner or leaseholder of the BSAI crab fishing industry must fill out the appropriate EDR form annually. The data collected is specific to the crab fisheries in the Crab Rationalization Program and includes information on costs of fishing and processing, revenues for harvesters and processors, and employment data.

14.3 *Use of data*

Data will be supplied to NMFS, Council staff, and any other authorized users according to statutory and regulatory data confidentiality requirements in a blind and unaggregated form. The blind format is intended to safeguard information that is perceived to be highly proprietary and prevent analysts from directly identifying the source of any observations. Specifically, all identifiers associated with a data submitter are eliminated and replaced with a unique number, which does not reveal the identity of the submitter. However, in cases where the data (including identifiers) are requested by NMFS Enforcement, NOAA General Counsel, the Department of Justice, or the Federal Trade Commission for a purpose

connected to law enforcement or qualification for quota and other Federal permits, PSMFC will continue to provide the data and the identity of the submitter.

14.4 Verification of Data

The third-party data collection agent will verify the data in a manner that assures accuracy of the information supplied by private parties. The data collection agent may review and request for the owner or leaseholder to provide copies of additional data.

14.5 Duration

The data collection program will continue through the life of the Crab Rationalization Program.

14.6 Failure to Submit Forms

Participation in the data collection program is mandatory. Should a submitter fail to submit the appropriate EDR to PSMFC by the deadline, the infraction will be referred to the Office of Law Enforcement.

14.7 Enforcement of the Data Requirements

The intent of Amendment 42 for the wording of what was (F) Enforcement of Data Requirements is unclear and further research is needed. The FMP amendment may or may not have retained the following text under paragraph 14.7:

The Council endorses the approach to enforcing the data requirements developed by the staff and the Data Collection Committee, as set out on page 3.17-20 in the February 2003 document entitled “BSAI Crab Rationalization Program, Trailing Amendments”, which provides:

Anticipated Enforcement of the Data Collection Program The analysts anticipate that enforcement of the data collection program will be different from enforcement programs used to ensure that accurate landings are reported. It is critical that landings data are reported in an accurate and timely manner, especially under an IFQ system, to properly monitor catch and remaining quota. However, because it is unlikely that the economic data will be used for in-season management, it is anticipated that persons submitting the data will have an opportunity to correct omissions and errors³⁷ before any enforcement action would be taken. Giving the person submitting data a chance to correct problems is considered important because of the complexities associated with generating these data. Only if the agency and the person submitting the data cannot reach a solution would the enforcement agency³⁸ be contacted. The intent of this program is to ensure that accurate data are collected without being overly burdensome on industry for unintended errors.

A discussion of four scenarios will be presented to reflect the analysts understanding of how the enforcement program would function. The four scenarios are: (1) a case where no information is provided on a survey; (2) a case where partial information is provided; (3) a case where the agency has questions regarding the accuracy of the data that has been submitted; and (4) a case where a random “audit” to verify the data does not agree with data submitted in the survey.

In the first case, the person required to fill out the survey does not do so. In the second case, the person fills out some of the requested information, but the survey is incomplete. Under either case that person would be contacted by the agency collecting the data and asked to fulfill their obligation to provide the required information. If the problem is resolved and the requested data are provided, no other action would be taken. If that person does not comply with the request, the collecting agency would notify enforcement that the person is not complying with the requirement to provide the data. Enforcement would then use their discretion regarding the best method to achieve compliance. Those methods would likely include fines or loss of quota and could include criminal prosecution.

In the third case the person fills out all of the requested information, but the agency collecting the data, or the analysts using the data, have questions regarding some of the information provided. For example, this may occur when information provided by one company is much different than that provided by similar companies. These data would only be called into question when obvious differences are encountered. Should these cases arise, the agency collecting the data would request that the person providing the data double check the information. Any reporting errors could be corrected at that time. If the person submitting the data indicates that the data are accurate and the agency still has questions regarding the data, that firm's data could be "audited". It is anticipated that the review of data would be conducted by an accounting firm selected jointly by the agency and members of industry. Only when that firm refuses to comply with the collecting agencies attempts to verify the accuracy of the data would enforcement be contacted. Once contacted, enforcement would once again use their discretion on how to achieve compliance.

The fourth case would result when the "audit"³⁹ reports different information than the survey. The "audit" procedure being contemplated is a verification protocol similar to that which was envisioned for use in the pollock data collection program developed by NMFS and PSMFC. During the design of this process, input from certified public accountants was solicited in order to develop a verification process that is less costly and cumbersome than a typical "audit" procedure. That protocol involves using an accounting firm, agreed upon by the agency and industry, to conduct a random review of certain elements of the data provided.⁴⁰

Since some of the information requested in the surveys may not be maintained by companies and must be calculated, it is possible that differences between the "audited" data from financial statements and survey data may arise. In that case the person filling out the survey would be asked to show how their numbers were derived.⁴¹ If their explanation resolves the problem, there would be no further action needed. If questions remained, the agency would continue to work with the providers of the data. Only when an impasse is reached would enforcement be called upon to resolve the issue. It is hoped that this system would help to prevent abuse of the verification and enforcement authority.

In summary, members of the crab industry will be contacted and given the opportunity to explain and/or correct any problems with the data, that are not willful and intentional attempts to mislead, before enforcement actions are taken. Agency staff does not view enforcement of this program as they would a quota monitoring program. Because these data are not being collected in "real" time, there is the opportunity to resolve occasional problems as part of the data collection system. Development of a program that collects the best information possible to conduct analyses of the crab rationalization program, minimizes the burden on industry, and minimizes the need for enforcement actions are the goals of the data collection initiative.

Footnotes to 14.7:

³⁷ *The intent of the program is to have enforcement actions triggered by the willful and intentional submission of incorrect data or noncompliance with the requirements to submit data.*

³⁸ *The term enforcement agency in this case may or may not include the RAM Division and the Office of Administrative Appeals (in addition to NMFS Enforcement). Those details are still under discussion within NOAA.*

³⁹ *This "audit" could be the result of either the random review process that is contemplated or an "audit" triggered under scenario three.*

⁴⁰ *However, in cases of non-compliance in which enforcement has to be notified, the data verification process is likely be more comprehensive.*

⁴¹ *Any time a number must be derived, the survey will provide direction on how the calculate the information requested. This direction should help minimize differences. However, when discrepancies do arise, the firm will be given an opportunity to show how they derived their figures and correct the information if necessary.*

Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area (BSAI FMP)

3.7.5 Amendment 80

3.7.5.9 Economic Data Report

A socioeconomic data collection program will be implemented for the non-AFA trawl CP sector. Data will be collected on a periodic basis. The purpose of the data collection program is to understand the economic effects of the Amendment 80 program on vessels or entities regulated by this action, and to inform future management actions.

3.6.2 Prohibited Species Catch Limits

3.6.2.1.6 Chinook Salmon

There is no reference to the Chinook salmon bycatch economic data collection requirements in the BSAI FMP. The last sentence of section 3.6.2.1.6 states the following:

The process for allocating the Bering Sea Chinook salmon PSC limit among participants in the Bering Sea pollock fishery; requirements governing the transfer and use of these allocations; and requirements for an IPA, the performance standard, annual reporting, and other aspects of the Bering Sea Chinook Salmon Bycatch Management Program are specified in Federal regulations implementing the FMP.

The BSAI FMP also contains the following sections that generally authorize recordkeeping and reporting requirements necessary to implement conservation and management measures regulations needed.

3.9.1 Recordkeeping and Reporting

The Council and NMFS must have the best available biological and socioeconomic information with which to carry out their responsibilities for conserving and managing groundfish resources, as well as other fish resources, such as crab, halibut, and salmon, that are incidentally caught in the groundfish fishery. This information is used for making inseason and inter-season management decisions that affect these resources as well as the fishing industry that utilize them. This information is also used to judge the effectiveness of regulations guiding these decisions. The Council will recommend changes to regulations when necessary on the basis of such information.

The need for the Council and NMFS to consider the best available information is explicit in the goals and objectives as established by the Council and contained in the FMP. They are also explicit in the Magnuson-Stevens Act, Executive Order 12866, the Regulatory Flexibility Act, the National Environmental Policy Act, and other applicable law. The Secretary, therefore, will require segments of the fishing industry to keep and report certain records as necessary to provide the Council and NMFS with the needed information to accomplish these goals and objectives. The Secretary may implement and amend regulations at times to carry out these requirements after receiving Council recommendations to do so, or at other times as necessary to accomplish these goals and objectives. Regulations will be proposed and implemented in accordance with the Administrative Procedure Act, the Magnuson-Stevens Act, and other applicable law.

Information on catch and production, effort, and price

In consultation with the Council, the Secretary may require recordkeeping that is necessary and appropriate to determine catch, production, effort, price, and other information necessary for conservation and management of the fisheries. Such requirements may include the use of catch and/or product logs, product transfer logs, effort logs, or other records. The Secretary may require the industry

to submit periodic reports or surveys of catch and fishery performance information derived from the logs or other recordkeeping requirements.

Recordkeeping and reporting is required of operators of catcher vessels, catcher/processor vessels, mothership processor vessels, and by responsible officers of shoreside processor plants.

3.9.1.1 Processor Reports

All processors of groundfish shall report information necessary for the management of groundfish resources. The regulations implementing this plan specify the information to be reported and the time schedule for reporting.

Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP)

There is no specific reference to economic data collection or reporting requirements in the GOA FMP. Requirements that apply to trawl catcher vessels, catcher/processors, and processors that operate in the GOA are implemented under the general recordkeeping and reporting authority in section 3.9 of the GOA FMP. Therefore, amending EDR requirements for the GOA should require only regulatory amendments and revisions to forms and instructions.

3.9 Monitoring and Reporting

The Council and NMFS must have the best available biological and socioeconomic information with which to carry out their responsibilities for conserving and managing groundfish resources, as well as other fish resources, such as crab, halibut, and salmon, which are incidentally caught in the groundfish fishery. This catch monitoring and reporting information is used for making inseason and inter-season management decisions that affect these resources as well as the fishing industry that utilize them. Information collected from industry reports and through the Observer Program constitutes the standardized reporting methodology for the GOA groundfish fishery. The standardized reporting methodology means established, consistent procedures used to collect, record, and report catch and bycatch in the fisheries. One of the purposes of industry reports and the Observer Program is to collect, record, and report bycatch data in the fisheries that are used to assess the amount of type of bycatch occurring in the fishery and inform the development of conservation and management measures that, to the extent practicable, minimize bycatch and bycatch mortality.

Scientific evaluation of the information that is collected through the Observer Program is used to adjust the sampling plan for observer and electronic monitoring deployment. Monitoring and reporting information is also used to judge the effectiveness of regulations guiding the standardized reporting methodology. The Council will recommend changes to regulations when necessary on the basis of such information

3.9.1 Recordkeeping and Reporting

The Council and NMFS must have the best available biological and socioeconomic information with which to carry out their responsibilities for conserving and managing groundfish resources, as well as other fish resources, such as crab, halibut, and salmon, that are incidentally caught in the groundfish fishery. This information is used for making inseason and inter-season management decisions that affect these resources as well as the fishing industry that utilize them. This information is also used to judge the effectiveness of regulations guiding these decisions. The Council will recommend changes to regulations when necessary on the basis of such information.

The need for the Council and NMFS to consider the best available information is explicit in the goals and objectives as established by the Council and contained in the FMP. They are also explicit in the

Magnuson Stevens Act, Executive Order 12866, the Regulatory Flexibility Act, the National Environmental Policy Act, and other applicable law. The Secretary, therefore, will require segments of the fishing industry to keep and report certain records as necessary to provide the Council and NMFS with the needed information to accomplish these goals and objectives. The Secretary may implement and amend regulations at times to carry out these requirements after receiving Council recommendations to do so, or at other times as necessary to accomplish these goals and objectives. Regulations will be proposed and implemented in accordance with the Administrative Procedure Act, the Magnuson-Stevens Act, and other applicable law.

3.9.1.1 Information on catch and production, effort, and price

In consultation with the Council, the Secretary may require recordkeeping that is necessary and appropriate to determine catch, production, effort, price, and other information necessary for conservation and management of the fisheries. Such requirements may include the use of catch and/or product logs, product transfer logs, effort logs, or other records. The Secretary may require the industry to submit periodic reports or surveys of catch and fishery performance information derived from the logs or other recordkeeping requirements.

Recordkeeping and reporting is required of operators of catcher vessels, catcher/processor vessels, mothership processor vessels, and by responsible officers of shoreside processor plants. Such requirements will be contained in regulations implementing this FMP.

Appendix B – Statement of Work

Pacific States Marine Fisheries Commission Statement of Work: Bering Sea Aleutian Islands Crab Rationalization Economic Data Report Data Validation

Aldrich CPAs + Advisors LLP

\$28,000 expires February 28, 2019

Description

Under regulations promulgated by the United States Secretary of Commerce, fishing and seafood processing businesses and associated participants in the Bering Sea and Aleutian Islands Crab Rationalization (CR), American Fisheries Act (AFA), and Amendment 80 (A80) fishery management programs, and groundfish trawl fisheries in the Gulf of Alaska (GOA Trawl), are subject to mandatory annual economic data collection censuses, referred to as Economic Data Reports (EDR). As developed by the North Pacific Fishery Management Council (Council) and implemented by National Marine Fisheries Service (NMFS), EDR requirements for regulated participants in these fisheries are specified under 50 CFR 680.6, 679.65, 679.94, and 679.110, respectively. EDRs are intended to provide employment, cost, sales and other business data to inform the Council's oversight of fishery management through improved analyses of economic performance of affected harvesters and processors participating in these Alaska fisheries, and social and economic effects on associated communities. The Council placed a high priority on data quality assurance (QA) in design of EDR programs. Compliance with EDR submission requirements is mandatory for all subject entities as a condition of federal fishery permit issuance and renewal, and failure to submit required EDR forms in a timely manner is grounds for enforcement action by NMFS Office of Law Enforcement. In addition to these and other data QA elements, the Council specified EDR regulations to include data verification audits of EDR records, to be performed by a qualified financial auditor contracted and authorized to solicit and review financial and other supporting company records from EDR submitters, assess reported data values against supporting records, and verify accurate values.

Data collection and management of EDR programs for Alaska fisheries is administered by the Pacific State Marine Fisheries Commission (PSMFC), under a grant from National Marine Fisheries Service (NMFS) and in collaboration with NMFS Alaska Fisheries Science Center (AFSC). For each distinct category of participant in the respective fisheries, EDR questionnaire forms have been designed to collect quantitative financial and administrative information about business operations with respect to the previous calendar year. Submission due dates are July 31 for the Crab EDR, and June 1 for all other EDR forms. Primary data validation is conducted by PSMFC during the course of data collection and employs automated database processes to identify gross and/or logical reporting errors and obtain submitter corrections where possible. Following completion of primary validation and error correction, the EDR database is further analyzed to identify a subset of records from the most recent 1-2 years of EDR submissions for verification audit, to be conducted by a contracted CPA firm according to protocols described below.

PSMFC subcontracting with Aldrich CPAs + Advisors LLP to implement and complete the third-party verification audit protocols as specified below for EDR forms submitted for calendar year 2017.

Specifications

The data verification audit will be conducted on selected data values reported in individual 2017 calendar year EDR forms submitted during 2018. The total set of EDR submissions is comprised of annual EDR forms collected from each participating entity in the respective fishery management program, including each vessel and processor in the BSAI crab program. An entity that operates two or more vessels or processing facilities subject to EDR requirements is required to submit a separate form for each vessel and/or plant. Distinct EDR forms are used for each of the industry sectors in the respective EDR programs, with questions/data items specifically addressing the nature of production and sales within the sector.⁴⁰

EDR forms are generally comprised of a certification section, containing identifying information for the entity and a signature statement certifying the reported information as accurate and complete, and a data section containing a series of tabular reporting grids which specify operational, employment, cost, and earnings information to be reported. Validation audits are conducted only on information from the data section. Most data items are reported as annual, calendar year quantity (e.g., hours, pounds, etc) and/or monetary value totals, categorized by one or more stratifying factors (e.g., fishery season, cost category, product type, etc.). A smaller set of data items in EDR records are categorical responses (e.g., yes/no) or annual average rates (e.g., price per pound or gallons per hour). The number of individual, non-zero/non-null data entries reported in a submitted EDR form is variable, depending on the type of form submitted and the number of applicable data items and/or strata. On average, crab catcher vessel EDR submissions report approximately 70 distinct data entries across 16 data items, crab processor EDRs report approximately 280 distinct entries across 18 data items, crab catcher-processor EDRs report approximately 310 distinct entries across 26 data items (Table).

Table 1: Counts of submitted EDR forms and estimated data elements subject to potential selection for verification audit

EDR type	Data items	2017	
		EDRs	Data entries
Crab EDR Total	60	91	5460
Catcher/Processor	26	2	52
Shoreside Processor	18	19	342
Catcher Vessel	16	70	1,120

Only a subset of EDR records and data entries are selected for audit verification. All audit selection procedures will be performed by PSMFC/ AFSC⁴¹ based on three sets of criteria:

⁴⁰ The current EDR forms are available for download at http://www.psmfc.org/alaska_crab/ for the BSAI crab EDR program. Online web application versions of each EDR form are hosted on PSMFC's website, which support more streamlined data entry steps for the submitting entity as well as automatically generating electronic data records; these are used by a majority of submitters, but completed paper forms may be delivered to PSMFC by mail/fax at the option of the submitter.

⁴¹ In prior RFPs and contracts for EDR verification audits, the procedure for random audit selection was included in the scope of work to be performed by the contractor. The random sampling procedure previously specified a sampling formula and minimum sampling rate designed to support statistical inferences of audit results from the respective audit samples to the associated populations of EDR records. This RFP revises the audit selection process, which will be performed entirely by PSMFC/ASFC.

- 1.) **Random selection:** for a predefined set of data items, a subset of EDR records will be randomly selected for verification of reported values;
- 2.) **Outlier selection:** targeted selection of individual data values reported in specific EDR records that fail primary and/or statistical validation tests performed by PSMFC/AFSC and are thus identified as likely reporting errors; and
- 3.) **For-cause selection:** EDR records submitted by entities that have failed to meet minimum standards for timeliness and/or accuracy in current or recent EDR submissions.

EDR records selected for audit will be provided to the contractor in an electronic database file containing the EDR record number, contact information for the submitting entity, and a table of corresponding data items and reported values to be verified, as described in more detail below. Based on EDR audits conducted to date and revised sampling procedures to be employed, it is anticipated that the total number of individual EDR records, distinct data items, and distinct data values selected for audit will be as follows:

Table 2: Estimated counts of EDR records selected for audit verification for 2017 EDRs

EDR Program	Estimated audit selections per year		
	EDRs	Data items	Data entries
Crab EDR total for 2017	16	14	71

Crab EDRs are due to PSMFC on July 31st of each year. Time required to complete primary validation, finalization of electronic EDR records, and outlier detection/selection may require up to six weeks. Although there is some uncertainty regarding the date by which EDR records will be finalized and selected for audit, usually all EDR data records subject to verification audit will be available to the contractor by September 30th.

Scope of Work

The general protocol for validating EDR data values is the following:

PSMFC/NMFS will select EDR records for audit based on criteria outlined above. In all cases, the verification procedures for a selected data entry are largely the same. The subset of data items (variables) selected for audit varies each year, but typically comprises a set of 5-25 distinct items from each of the respective EDR forms. PSMFC will compile a single tabular data report listing all selected data entries (total data entries shown in Table 2 above) by EDR record number (booklet_id), providing an abbreviated description of the variable, the data entry value reported by the submitter, three fields for recording verification results, and a description of the reason for selection (see Table 3 below). This tabular report is to be used by the auditor as the primary vehicle for recording final verification results for each selected entry and delivery to PSMFC (see *Deliverables: Audit results database* below). The integrity of information represented in the tabular data report is critical to satisfactory performance of the contract; auditors must ensure that the verification results are represented accurately, according to all protocols detailed below, and that the tabular structure is carefully maintained to prevent corruption of data contained therein. In separate tables, PSMFC will also provide a listing of contact information for the associated EDR submitters, and a set of EDR variable descriptions corresponding to each distinct variable included in the audit selection, formatted for use in written communication with EDR submitters, and an archive of the complete EDR record for each respective EDR booklet included in the audit selection.

The auditor will review the EDR records and communicate with the submitters to request supporting records for the specific items to be verified. The auditor may request and review copies of additional data or records provided by the EDR submitter, including but not limited to: previously audited or reviewed financial statements, worksheets, tax returns, invoices, receipts, and other original documents substantiating the data. It is not possible to define the exact nature of the supporting information an auditor may be provided with when conducting an audit because each company has their own style of financial recordkeeping. Some follow-up communication may be necessary to identify and receive the necessary records.

Using the supporting records supplied by the EDR submitter, the auditor will validate the reported values. Validation includes evaluating the quality of supporting documentation supplied as the basis for verification of reported EDR values; identification and classification of reporting errors; and, where possible, identifying a correction and quantifying the amount of reporting error for each audited data value. Some of the information collected in EDRs is not maintained in submitter records exactly as described in the EDR form, requiring the submitter to derive or approximate the value to report (e.g. by pro rata distribution). In these instances, the method of approximation and any calculations must be documented by the submitter to be validated. The auditor will review and evaluate the methods used for consistency with standard accounting practices, validate calculations, and where appropriate, quantify the error and identify a correction. Criteria for validation and classification of supporting records and reporting errors are described below.

Validation results for each audited data entry will be recorded by auditors in a database that is appropriately structured for import into a relational database by PSMFC. Conformance to database standards and attention to data integrity in recording and conveyance of audit result data to PSMFC is a critical element in the proposal evaluation. In addition, the auditor will provide a document summarizing the methods and results, including any additional quantitative and/or qualitative findings not captured in the audit results database.

The Auditor shall not complete and/or submit Economic Data Reports (EDR) as the designated representative of an EDR submitter while under contract for this work. In the event that the Auditor knowingly provides information for a client for the express purpose of reporting in an EDR, the Auditor must disclose this fact when samples are being selected for this audit.

Selection of audits and data preparation:

- NMFS will analyze the EDR data submitted for outliers and other data anomalies and select records on this basis for audit verification (outlier selection).
- PSMFC will identify for-cause audit selections.
- Conditional on the number and range of outlier and for-cause selection, NMFS will select EDR data items from each respective EDR form and generate a random selection of corresponding EDR records to supplement the outlier and for-cause sets.
 - Use of randomized audit selection is discretionary.
 - Entities that received a “fail” audit letter for the previous year may be subject to for-cause selection for audit, with consideration given to mitigating circumstances.
 - All audit selections will include a description of the reason for selection (e.g., “outlier: value is global outlier for variable, 10x greater than next highest reported value for 2017”, “for-cause: fail determination in 2016”, etc.). For selected entries where original value is reported as 0, nonnumeric (“N/A”), or null (blank), this will include guidance re:

logically valid entries for original and/or corrected value and corresponding validation codes, e.g.:

- Is 0 or N/A a plausible value for the variable
 - For “N/A” or blank entries, if validation confirms the original entry, should corrected value be recorded as 0 (Validation code =1T), or “N/A” (Validation code = 10).
- The complete set of audit selections will be limited to between 4 and 15 items from each EDR form, for a total of no more than 40 distinct data items across all three sectors, and 75 to 800 total data entries selected.
 - PSMFC will compile the selected EDR records into a tabular data report to be used by the Auditor to record validation results for each record.
 - PSMFC will prepare an archive of the complete EDR record for each submitter included in the audit selection, provide contact information for all EDR submitters selected, and assist with making arrangements between the Auditor and EDR submitters as needed.
 - PSMFC/NMFS will provide letter templates for auditor to use in preparing formal notices for mailing to EDR submitters (i.e., initial audit notices and submitter feedback letters).
 - PSMFC and NMFS will consult with the Auditor to determine the appropriate types of documentation and degree of supporting records detail that are sufficient and appropriate basis the verify selected EDR variables.

Data verification and analysis:

- The Auditor will coordinate preparation and mailing of written audit notices (using templates provided) to solicit supporting information from the selected EDR submitters for selected data entries.
- The Auditor will monitor submitter response to audit notices, organize and manage all materials and information received from submitters (including documentary materials and information conveyed verbally), and conduct additional correspondence with the submitters as needed to obtain additional records and information sufficient to complete the verification process.
- The Auditor will analyze the records and other supporting information provided by submitters and apply generally accepted accounting principles to evaluate the quality of supporting information according and verify the accuracy of reported values. For each data value selected for audit, data verification procedures are the following:
 - Evaluate the quality of supporting records and other documentation supplied as the basis for data verification;
 - Evaluate accounting/recordkeeping methods, calculations, logical considerations, and/or other factors used by the submitter to derive or approximate the reported value from supporting documentation;
 - Evaluate the accuracy of the original reported value;
 - Where the original value cannot be verified and/or is determined to be inaccurate, consult with the submitter to obtain corrections, additional records and other information as needed to identify the accurate (verified) value, as confirmed by the submitter.
- The Auditor will record the evaluation and verification results for each value audited in the *Audit results database*, using the *Support analysis codes* framework (specified in Table 4 below).
- The Auditor will prepare a final project report for public distribution, summarizing audit procedures and administrative procedures, summary of results, a general discussion of notable issues identified during the course of the audit including problems encountered by submitters

with EDR forms and supporting records, audit procedures under the SOW, and recommendations for modifications of EDR data collection and audit procedures for the future.

- The Auditor will coordinate preparation and mailing of Submitter Feedback Letters (following consultation with PSMFC and NMFS and using templates provided) to notify audited EDR submitters of audit results for their selected data, including summary audit finding (Well-supported/Semi-supported/Fail), by-item verification results for their selected data, suggestions for improved EDR reporting and record keeping, and notice of any failure of the submitter to comply with verification audit requirements.

Deliverables:

Progress reports and invoices

- The Auditor will submit verbal or written updates to PSMFC and NMFS every two to three weeks to validate work and resolve questions or issues encountered.
- Progress reports will act as intermittent deliverables to ensure quality of work and to address any problems that may arise throughout the project.
- Charges for expenditures should be listed on the invoice as a separate line item.
- Final invoice should be marked “Final”.

Audit results database

- Upon completion of all audit validation procedures, validation results will be delivered to PSMFC in an electronic database table, consolidating results for all EDR types (CP, CV, and shoreside processor) in one table, listing each EDR entry selected for audit by booklet_id, table name, variable name, cause for selection, and original reported value (all columns populated in the table of audit selections provided by PSMFC), with Original Support Analysis Code, Validated Value, and Validated Support Analysis Code based on Auditors findings.
 - Table below is an example of the tabular format of audit results data to be provided to PSMFC by the Auditor.
 - Depending on database software available to the Auditor (Microsoft Access, Excel, etc.), PSMFC will work with the Auditor to provide a file structure and format for recording audit results to ensure data integrity

Table 3: Format of tabular audit results data

BookletID	Table name	Variable name	Cause for selection	Original Value	Original Support Analysis (Code 0-10)	Validated Value	Validated Support Analysis (Code 0,1,5,7,9 or 10)
2010V-4000A	5.2 Capital Expenditures	Total_expenditure	High global outlier	250,456	6	254,005	5

- PSMFC will provide the contact information, BookletID, Table name, Variable name (description of data item as it is listed in the EDR and referenced in the EDR database), and Original Value of each variable to be audited.
- The Auditor will provide the coded “Original Support Analysis” (codes 0-10), “Validated Value” identified by auditors (equaling either the original value or a corrected value) and confirmed by the submitter, and the coded “Validated Support Analysis” (codes 0,1,5,7,9 or 10).
- Support analysis classification codes are shown in Table below.

Table 4: Support analysis codes

Audit codes	Documented support for Original Value	Documented support for Verified Value	Validation result	Measurement error effect type	Correction
0*	No	No	Respondent did not respond to audit request for supporting records; represents noncompliance.	None	No
1*	Yes	Yes (same as original)	No error; reported value is clearly substantiated by complete records. [Zero handling: Original value is "0": Correct value = 0 (no correction). Original and corrected code = 1.]	None	No
1T*	Yes	Yes (same as original)	Original value is blank or 'N/A': Correct value = 0 (not counted as error for fail letters)	None	No
2	Yes	Yes (same as original)	Calculation error	Respondent	Yes
2T	Yes	Yes (same as original)	Observable typographic error on the respondent's part	Respondent	Yes
3	Yes	Yes (same as original)	Misinterpretation of question	Questionnaire - wording	Yes
4	Yes	Yes (same as original)	Estimate is based on original documentation but flawed assumptions/logic	Questionnaire - specification + Respondent	Yes
5*	Yes	Yes (same as original)	Data cannot be reported precisely as specified in EDR form and must be estimated; estimate is based on appropriate documentation and sound assumptions/logic and is considered validated	Questionnaire - specification	No
6	Yes	Yes (updated)	Original value was reported correctly based on original documentation, but corrected based on updated documentation	Questionnaire - specification	Yes
7*	No	No	Original value is unsubstantiated, and no validated value can be substantiated based on available records; original value is confirmed as representing good faith "best guess"	Questionnaire - specification + Respondent	No
8	No	Yes (new)	Original value is unsubstantiated; correction is based on new documentation	Questionnaire - specification + Respondent error	Yes
9*	No	No	Original value is blank (missing data); available information contraindicates 0 or N/A and no validated value can be confirmed based on available records. If applied to Validated Support Analysis, this indicates a submitter's good faith inability to resolve a non-response to a verified value. Otherwise, apply Code 0.	Respondent	No. Auditor leaves corrected value blank and enters 9 for Validated Support Analysis **PSMFC enters -9 values in database UR notes to indicate known item nonresponse.

Audit codes	Documented support for Original Value	Documented support for Verified Value	Validation result	Measurement error effect type	Correction
10*	No	No	Item "Not Applicable" to vessel	None	No **PSMFC enters -7 values in database UR notes to indicate non-applicability of the data element.
Docu-ment	Yes	Yes (same as original)	Primary key error is defined as an error in the categorization of the reported value by a stratifying variable (e.g., fishery code, location code, product code, etc.), rather than an error in the reported value itself. For example, a submitter accidentally records EAG fishery activity in the row for the WAG fishery.	Respondent	Yes
Docu-ment	Yes	Yes (same as original)	Administrative errors should be documented in such a way that PSMFC can identify where corrections to the database need to be made; and NMFS can identify the respondent's original reported value as distinct from any error introduced by the administrative data entry process.	Administrative	Yes
*denotes audit codes that should be used to classify corrected values					
<p>Regarding "blank" (missing), "0", and "N/A" responses: In cases where a null (blank), "0", or "N/A" original value is selected for audit, the validation objective is to distinguish and resolve cases where the respondent intended to indicate a 0 or N/A response (which are attributed to incomplete instructions in the questionnaire, and coded 1T and 10, respectively), and cases of respondent error where a non-null/nonzero response can be validated. In such cases, audit codes 2,3,4,6, or 8 should be used to characterize the type of response error indicated for the original (null) value, and an appropriate audit code applied to the verified value. If the respondent is responsive to the audit request but is unable to resolve the null value (e.g., due to loss of accounting records) to confirm a verified value, code 9 should be applied to both original and verified support code. If no response to an audit request is provided regarding a null original value, code 9 should be entered as the original support code, validated value left blank, and code 0 entered as the validated support code to indicate audit noncompliance.</p>					

Final project report

The Final Project Report to be prepared by the Auditor provides a brief summary of verification audit methods, results, and general findings, and is intended for public distribution for PSMFC. The following outlines the organization of the report contents:

- A summary of background, description of verification audit methods and procedures
- Summary of audit results, organized by EDR type, providing
 - Tabulated summaries of audit results for each selected variable (aggregated to protect confidential submitter information) and general description of findings regarding quality of records provided for support reported values (e.g., 3rd party documentation vs. informal description of data source or estimation). Figure 1 below is an example of presentation of summary audit results for one EDR data item (variable) in the final audit report document

Figure 1: Example of summary audit results for one EDR data item (variable)

Variable 1: Table 3 – Revenue: Total fishery product sales volume (in mT)

Support Analysis Code	Initial Reporting		Corrected Reporting	
	# of Vessels	% of Total	As Corrected # of Vessels	As Corrected % of Total
1	17	94%	18	100%
2T	1	6%	0	0%
Total	18	100%	18	100%

Support analysis code in (#) below and description of support provided:

- (1) Seventeen vessels provided support for the initial values, which were substantiated by the 2014 sales summary reports or detailed sales listings.
- (2T) One vessel provided support for the initial value, which was substantiated by the 2014 sales summary report; however, the values reported are an observable typographic error on the respondent's part. The corrected support analysis was updated to a (1). This vessel provided sales summary report.

- Summary or feedback by submitters regarding time required to 1) complete and submit the EDR form, and 2) comply with verification audit requirements (i.e., collect and deliver requested records, communicate with auditors by phone, confirm verified data values).
- A general discussion of notable issues identified during the course of the audit, including:
 - General compliance with audit procedures (were submitters forthcoming timely response to all requests for information, were multiple contacts required to obtain an initial response or to obtain supplementary information)
 - General patterns in validation errors, e.g. directional bias in original values (consistently higher/lower than verified value), or general inconsistency of common recordkeeping practices with auditor expectations
 - Difficulty with particular questions in the EDR (e.g. interpretation or understanding of the information to be reported, ability to identify an accurate value based on available records)
- Discussion of any significant difficulties encountered with audit procedures as specified in the SOW, and recommendations for modifications of EDR data collection and audit procedures/SOW for the future
- Examples of the most recent final reports are located at:
 - http://www.psmfc.org/alaska_crab/documents/2015_2016_audit_results.pdf
 - http://www.psmfc.org/am80edr/documents/2015_2016_audits.pdf

Submitter feedback letters

In conference with PSMFS & NMFS, the results of the audit will be reviewed and NMFS will determine the number or errors and types of errors that signify where the break lies to determine who receives a Well-supported/Semi-supported/Fail letter.

- Well-supported/Semi-supported/Fail letters will be reviewed and updated by NMFS if needed.
- Well-supported/Semi-supported/Fail letters include the audited results for each company's EDR in a % error format so as not to release confidential data.
- The auditors will then mail letters with audit results to the audited companies and provide PSMFC with an electronic copy of letter they were mailed (well supported, semi supported, failed audit) for the record and for future possible enforcement action.

Records management of submitter-provided documents

After the data validation is concluded, all supporting documents provided to Auditor will be delivered by secure carrier to PSMFC for archiving.

Hours & Expenses

Below is the estimated hours to bill to PSMFC for conducting this work.

Table 5: Time and Cost for BSAI Crab EDR Audits

Professional	Title and Rate	Responsibilities	Estimated Hours (%)
Andy Maffia	Partner \$400/hr	<ul style="list-style-type: none"> • Signs Contract • Develops audit methodology and work plan • Supervises and reviews all audit work and analysis • Serves as liason/contact and participates in meetings with PSMFC • Reviews and directs writing of all reports 	15 (15%)
Kristen Guzman	Manager \$300/hr	<ul style="list-style-type: none"> • Oversees and assists in individual audits • Audits information received and answers direct questions • Reviews work performed by staff 	32 (31.5%)
Jonathan Hu	Staff \$145/hr	<ul style="list-style-type: none"> • Develops request for information • Contacts submitters (outlier and random) to solicit information • Audits information received based upon developed work program • Travels as necessary to validate data 	54(53.5%)
		Total hours for each year's audits	101
		Blended Rate	\$276.92
		Total for 2017 BSAI Crab EDR audits	\$28,000

Payment for services shall not exceed \$28,000 to begin work on the audit on 2017 BSAI Crab EDRs. Invoices should include number of hours charged to project broken out by staff hours for recordkeeping and budgeting purposes.

Out-of-pocket expenses will be billed separately based upon actual costs incurred. These costs include:

- Travel costs to attend meetings with Commission personnel based on federal guidelines for mileage.
- Travel costs to audit selected vessels, if applicable, including airfare or other travel costs, rental car, hotel and per diem for days out-of-town. If possible, we could coordinate this travel with travel for other clients, sharing the applicable costs.
- Postage, as applicable.

Aldrich CPAs + Advisors LLP will work closely with PSMFC to determine the appropriateness and need to travel to individual data submitters to audit the information collected on the EDR. The auditor expects to minimize these costs when possible and to use fax, scan, email, and other forms of communication to validate the data.

Timeline

- **August/September**
 - Initial planning meeting & contracts put in place (letter of intent)

NMFS (in consultation with PSMFC) determines outlier, for-cause, and random audit selections from the population of EDR submissions.

 - PSMFC provides auditor with outlier and random audit contact information.
 - PSMFC & NMFS compiles data from selected EDRs into a report that auditor will audit (Excel format).
- **October-November**
 - Auditor prepares audit notification letters for each entity that explains the process and has the list of variables (both random and outlier) selected.
 - Auditor sends letters to audit entities notifying them of selection and requesting supporting documentation of selected variables.
 - Outlier variables may be different from random audit variables, so additional information may be requested of random audit entities.
 - The owner or leaseholder must respond to inquiries by the auditors within 20 days of the date of issuance of the inquiry so notifications should be made via certified return receipt mail.
 - Random and For Cause Audit supporting documentation due
 - Auditor follows up with entities who do not respond or provide inadequate documentation
 - Auditor reviews and verifies selected variables based on supporting information provided
 - Auditor follows up with submitters on missing, inaccurate, and unsupported original entries to validate and confirm a corrected value;
 - If the submitter is uncertain re: how to calculate or estimate a value correctly, the auditor can provide suggestions based on methods used by comparable submitters.
 - The auditor should probe to determine if the correction of an invalidated original value potentially requires correction of one or more associated entry(ies) in the submitter's EDR form, the auditor should request additional supporting records as needed and add corresponding rows to the Audit results database.

- Auditor informs PSMFC of any companies that have not complied with the audit request and may need NMFS enforcement action.
- **December**
 - Analysis completed
 - Data analysis, process report and audit participant feedback letter drafts due to NMFS and PSMFC for Random and Outlier audits
 - Final data analysis and report drafts due to NMFS and PSMFC
 - Conference call to discuss results and pass/fail letters that will go out.
 - Auditor sends feedback letter for participation to all vessels.
 - Auditor to update the Supported/Unsupported categories with PSMFC & NMFS by end of month if needed