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## APPENDIX A: Social and Economic Data Requirements for Federally Managed Commercial Fisheries

### Introduction

NMFS uses social and economic data and the models and analyses they support to monitor, explain and predict changes in the social and economic performance and impacts of federally managed fisheries. The legal and policy requirements for social and economic data and analyses are intended to promote better informed conservation and management decisions on the use of living marine resources and marine habitat in federally managed fisheries by improving the ability of NMFS and the Councils to monitor, explain and predict those changes.

In this appendix, we address the following 16 laws, Executive Orders (EOs) and NOAA Fisheries strategy and policy statements with requirements for social and/or economic data, models and analyses.

1. The [Magnuson-Stevens Fishery Conservation and Management Act](#) (MSA)

2. The [National Environmental Policy Act](#) (NEPA)
3. The [Regulatory Flexibility Act](#) (RFA)
4. [EO 12898](#) (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)
5. [EO 13985](#) (Advancing Racial Equity and Support for Underserved Communities Through the Federal Government)
6. [EO 12866](#) (Regulatory Planning and Review)
7. [EO 13771](#) (Reducing Regulation and Controlling Regulatory Costs)
8. [EO 13840](#) (Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States)
9. The [NOAA Fisheries Guidelines for Assessment of the Social Impact of Fishery Management Actions](#)
10. The [NOAA Fisheries Guidelines for Economic Reviews of Regulatory Actions](#)
11. The [NOAA Fisheries Strategic Plan 2019-2022](#) (Strategic Plan)
12. The [NOAA Fisheries Ecosystem-Based Fishery Management \(EBFM\) Road Map](#)
13. The [NOAA Fisheries National Bycatch Reduction Strategy](#)
14. [NOAA's Catch Share Policy](#)

We use the terms “needed” and “required”, with respect to social and economic data, to refer to data that would support more than a highly superficial effort to comply with or support those laws, EOs and statements.

## 1. **MSA**

Under the MSA there are a variety of requirements related to social and economic issues for fishermen and their communities.

In addition to identifying the importance of social and economic information, the MSA includes requirements that NMFS and the Councils can at best meet superficially without basic social and economic data. Specifically, NMFS and the Councils need social and/or economic data to meet and/or to know if they have met each of the 10 National Standards, 9 of the 15 required provisions of a Fishery Management Plan (FMP), some discretionary provisions of an FMP, and some of the required actions by the Secretary. Below, we present examples of the most explicit MSA requirements for economic data.

### **1.1 National Standards**

#### **National Standard 1:**

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry (see 16 USC Ch 38 §1851 (a)(1)).

As defined in the MSA (see 16 USC Ch 38 §1802(33)), “The term "optimum", with respect to the yield from a fishery, means the amount of fish which—(A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; (B) is prescribed on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant social, economic, or ecological factor; and (C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery.”

NMFS requires basic economic data and the economic models and analyses they support to determine the amount of fish that “will provide the greatest overall benefit to the Nation” and whether there are economic factors that justify setting the OY below the MSY.

## **National Standard 2:**

Conservation and management measures shall be based upon the best scientific information available (see 16 USC Ch 38 §1851 (a) (2)).

Various sections of the MSA make it clear that scientific information includes social and economic information. Further, current NOAA guidelines for National Standard 2 explicitly state that:

Fishery conservation and management require high quality and timely scientific information to effectively conserve and manage living marine resources.

Management decisions should recognize the ... economic (e.g., loss of fishery benefits) risks associated with the sources of uncertainty and gaps in the scientific information.

Each SAFE (Stock Assessment and Fishery Evaluation) report should contain the following scientific information when it exists: ... Pertinent economic ... information for assessing the success and impacts of management measures or the achievement of objectives of each FMP.

## **National Standard 3:**

To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination (see 16 USC Ch 38 §1851 (a)(3)).

NMFS principally uses biological information to identify the range of a stock of fish and the interrelated stocks of fish. However, stocks of fish can be interrelated due to fishing vessels that participate in multiple fisheries, take multiple species in a fishery, and stocks that compete in similar markets. NMFS can use social and economic data to address these additional stock interactions.

## **National Standard 4:**

Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges (see 16 USC Ch 38 §1851 (a)(4)).

NMFS uses basic economic data, including cost and earnings data for participants in the fishery, to identify some of the effects of such allocations and therefore to provide information that is useful in determining whether such allocations are “fair and equitable.” In addition, social and economic data are useful in determining what constitutes “an excessive share of such privileges.”

## **National Standard 5:**

Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose (see 16 USC Ch 38 §1851 (a)(5)).

NMFS uses cost and earnings data and other data to evaluate the effects of proposed measures on efficiency.

**National Standard 6:**

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches (see 16 USC Ch 38 §1851 (a)(6)).

The “variations among and contingencies in fisheries” are in part defined in terms of economic variables. Therefore, NMFS requires basic economic data to meet this standard.

**National Standard 7:**

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication (see 16 USC Ch 38 §1851 (a)(7)).

NMFS needs economic data, including cost and earnings data, to determine if it has met this national standard.

**National Standard 8:**

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities (see 16 USC Ch 38 §1851 (a)(8)).

Section 303(b)(6) on limited entry requires examination of "(A) present participation in the fishery, (B) historical fishing practices in, and dependence on, the fishery, (C) the economics of the fishery, (D) the capability of fishing vessels used in the fishery to engage in other fisheries, (E) the cultural and social framework relevant to the fishery and any affected fishing communities, and (F) any other relevant considerations." Section 303(a)(9) on preparation of Fishery Impact Statements notes they "shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on--(A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants."

There is an explicit requirement to use the best available social and economic data to meet this national standard. Specifically, we need social data to predict the extent to which we expect conservation and management measures to provide for the sustained participation and to minimize adverse social impacts.

**National Standard 9:**

Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch (see 16 USC Ch 38 §1851 (a)(9)).

Congress and NMFS have made it clear that the broadly defined benefits and costs of further reductions in the levels of bycatch or discard mortality rates are critical for determining if further reductions are practicable. Therefore, NMFS requires economic data to determine if we have met this national standard.

**National Standard 10:**

Conservation and management measures shall, to the extent practicable, promote the safety of

human life at sea (see 16 USC Ch 38 §1851 (a)(10)).

NMFS uses economic data in determining what further improvements in safety are practicable and, therefore, if it has met this national standard.

## **1.2 Regional Fishery Management Councils**

The following two MSA requirements for Council Scientific and Statistical Committees (SSCs) make it explicit that basic social and economic data, models and analyses are part of the scientific information that the Councils are required to consider.

Each Council shall establish, maintain, and appoint the members of a scientific and statistical committee to assist it in the development, collection, evaluation, and peer review of such statistical, biological, economic, social, and other scientific information as is relevant to such Council's development and amendment of any fishery management plan (see 16 USC Ch 38 §1852 (g)(1)(A)).

Each scientific and statistical committee shall provide its Council ongoing scientific advice for fishery management decisions, including ... reports on social and economic impacts of management measures ... (see 16 USC Ch 38 §1852 (g)(1)(B)).

## **1.3 FMP Required Provisions**

NMFS needs basic social and/or economic data to meet 9 of the 15 MSA required provisions for FMPs prepared by either a Council or the Secretary. The following are the four most explicit examples of those required provisions.

FMPs are required to “contain a description of the fishery, including, but not limited to ... the cost likely to be incurred in management, actual and potential revenues from the fishery ...” (see 16 USC Ch 38 §1853 (a)(2)). We need basic economic data to describe the cost likely to be incurred in management and the actual and potential revenues from the fishery.

FMPs are required to “include a fishery impact statement for the plan or amendment .... which shall assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures ... and possible mitigation measures” (see 16 USC Ch 38 §1853 (a)(9)). We need social and economic data to assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures and possible mitigation measures.

FMPs are required to “include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery, including its economic impact ...” (see 16 USC Ch 38 §1853 (a)(13)). We need economic data to describe the fishing sectors of a fishery and to estimate and describe the economic impacts.

FMPs are required to “to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate, taking into consideration the economic impact of the harvest restrictions or recovery benefits on the fishery participants in each sector, any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery;” (see 16 USC Ch 38 §1853 (a)(14)). NMFS needs economic data to: (1) identify and consider either the economic impact of the harvest restrictions or the recovery benefits on the fishery participants in each sector and (2) determine if the associated impacts and benefits are allocated fairly and equitably.

The MSA recognizes the importance of economic data for its effective implementation.

Therefore, it requires each FMP to “specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, charter fishing, and fish processing in the fishery, including ... economic information necessary to meet the requirements of this chapter (see 16 USC Ch 38 §1853 (a)(5)).

#### **1.4 Discretionary Provisions**

NMFS needs basic social and economic data for some of the discretionary provisions of FMPs. For example, it needs such data to “take into account ... the economics of the fishery” and “the cultural and social framework relevant to the fishery and any affected fishing communities” when establishing a limited access system for the fishery in order to achieve optimum yield (see 16 USC Ch 38 §1853 (b)(6)(C) and (D)). Similarly, it needs social and economic data to meet the following MSA requirements for a limited access privilege program (LAPP) or to determine if it has met these requirements.

1. Contribute to reducing capacity if established in the fishery with overcapacity (16 USC Ch 38 §1853a (c)(1)(B)).
2. Promote fishing safety, fishery conservation and management; and social and economic benefits (16 USC Ch 38 §1853a (c)(1)(C)).
3. Monitor and review the program to determine progress in meeting the goals of the program and this Act, and any necessary modification of the program to meet those goals (16 USC Ch 38 §1853a (c)(1)(G)).
4. Develop a community sustainability plan that demonstrates how the plan will address the social and economic development needs of coastal communities (16 USC Ch 38 §1853a (c)(3)(A)(i) (IV)).
5. Consider the economic barriers to access to fishery and the existence and severity of projected economic and social impacts associated with implementation of limited access privilege programs on harvesters, captains, crew, processors, and other businesses substantially dependent upon the fishery in the region or subregion (16 USC Ch 38 §1853a (c)(3)(B)).

#### **1.5 Action by the Secretary**

Finally, NMFS requires basic economic data and the economic models and analyses they support to meet more than superficially the following three required actions by the Secretary.

1. Review the plan or amendment to determine whether it is consistent with the national standards, the other provisions of this Act, and any other applicable law (16 USC Ch 38 §1854 (a)(1)(A)).
2. Evaluate the proposed regulations to determine whether they are consistent with the fishery management plan, plan amendment, this Act and other applicable law (16 USC Ch 38 §1854 (b) (1)).
3. Allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery (16 USC Ch 38 §1854 (e)(4)(B)).

## **2. National Environmental Policy Act (NEPA)**

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. NMFS is to do this 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. NMFS needs social and economic data and the models they support to conduct the required analyses and to predict the behavioral response of fishermen and others that affect the biological, ecological, economic, and social consequences.

### **3. Regulatory Flexibility Act (RFA)**

If the agency does not have a factual basis for a determination that there are not a substantial number of directly regulated small entities or that no significant adverse impact on directly regulated small entities will occur, it must prepare an initial regulatory flexibility analysis (IRFA) and a final regulatory flexibility analysis (FRFA). The IRFA: (1) describes the impact of the proposed rule on small entities [Sec. 603(a)] and (2) identifies the directly regulated small entities and any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and that minimize any significant economic impact of the proposed rule on small entities [Sec. 603(c)]. Each FRFA is required to describe the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes [Sec. 604(a)(5)]. In addition, several Sections of the RFA require Federal agencies to analyze the effects of regulations to determine whether an action will have or has had "a significant economic impact on a substantial number of small entities." Cost, revenue and ownership information for the specific activity in question (e.g., commercial fishing), as well as some level of general information on the full range of income producing activities in which firms are engaged are necessary to effectively conduct the RFA analyses. The RFA also requires that agencies consider all affiliations, worldwide, of regulated entities such as ownership affiliations and cooperative affiliations.

### **4. E.O. 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”**

NMFS *Guidelines for Assessment of the Social Impact of Fishery Management Actions* states that a Social Impact Assessment must address environmental justice issues, where they exist. E.O. 12898 requires, “To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories ...”

The Executive Order directs the development of agency strategies to include identification of differential patterns of consumption of natural resources among minority populations and low-income populations; Council on Environmental Quality (CEQ) environmental justice guidance under NEPA also specifically calls for consideration of potential disproportionately high and adverse impacts to Indian tribes (a term inclusive of Native Alaskans) beyond a more general consideration of potential disproportionately high and adverse impacts to minority populations (Council on Environmental Quality 1997). NMFS need social and economic data to conduct the required analysis.

### **5. E.O. 13985 “Advancing Racial Equity and Support for Underserved Communities Through the Federal Government”**

“... the Federal Government should pursue a comprehensive approach to advancing equity for

all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality... Because advancing equity requires a systematic approach to embedding fairness in decision making processes, executive departments and agencies must recognize and work to redress inequalities in their policies and programs that serve as barriers to equal opportunity.” NMFS needs social data to identify to identify where racial equity issues may exist.

## **6. EO 12866 “Regulatory Planning and Review”**

EO 12866 (58 FR 51735, October 4, 1993) requires analysis of the impacts of regulations implementing fishery conservation and management actions. Specifically, it includes the following requirements.

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 [Sec. 1(a)].

Each agency shall base its decisions on the best reasonably obtainable scientific, technical, economic and other information concerning the need for, and consequences of, the intended regulation” [Sec. 1(b)(7)].

In an effort to meet the requirements of EO 12866, NMFS or a Council prepares a Regulatory Impact Review (RIR) for each proposed regulatory action. The economic data, models and analyses used in an RIR in part determine its success in meeting those requirements and contributing to having a well-informed regulatory decision.

## **7. EO 13771 “Reducing Regulation and Controlling Regulatory Costs”**

EO 13771 (82 FR 9339, January 30, 2017) is intended to manage the costs of government regulation on private industry. It requires that “any new incremental costs associated with new regulations shall, to the extent permitted by law, be offset by the elimination of existing costs associated with at least two prior regulations.” In addition, it states that “the head of each agency shall identify, for each regulation that increases incremental cost, the offsetting regulations ... and provide the agency’s best approximation of the total costs or savings associated with each new regulation or repealed regulation” (see Sec 3). NMFS needs economic data, models and analyses to meet these requirements.

## **8. EO 13840 “Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States”**

Two of the seven stated policies of EO 13840 (83 FR 29431; June 22, 2018) require economic data, models and analyses. Those two policies are as follows:

(d) facilitate the economic growth of coastal communities and promote ocean industries, which employ millions of Americans, advance ocean science and technology, feed the American people, transport American goods, expand recreational opportunities, and enhance America’s energy security;

(e) ensure that Federal regulations and management decisions do not prevent productive and sustainable use of ocean, coastal, and Great Lakes waters;

## **9. NOAA Fisheries Guidelines for the Assessment of the Social Impact of Fishery Management Actions**

NMFS ... has provided operational guidance relative to social and community impacts to Regional Fishery Management Councils since 1991. NMFS provides this guidance because it holds that social impact assessment (SIA) is an essential part of the fishery management process and improves fishery conservation and management decision-making. Management decisions regarding appropriate courses of action thus cannot and should not be made without an adequate SIA. Without an SIA, a fishery management plan or amendment will not be considered complete. NMFS need social data and analysis to meet this requirement.

## **10. NOAA Fisheries Guidelines for Economic Reviews of Regulatory Actions**<sup>1</sup>

NMFS issued the guidelines, in part, to assist in understanding and meeting the analytical requirements of EO 12866 and the RFA for regulatory actions it plans to promulgate. EO 12866 and the RFA are two of the most direct mandates for the preparation of economic analyses and, therefore, for economic data.

Largely, the EO 12866 and RFA include similar requirement for economic analyses. The guidelines include the following two principal differences.

1. The RFAA must address the impacts of a proposed rule only on small entities subject to the regulation (i.e., small entities to which the rule will directly apply) and not on all small entities that are affected by the regulation (i.e., small entities to which the rule will indirectly apply).
2. Impacts under EO 12866 need not be identified at the vessel or firm level in the RIR, whereas, these levels remains the focus of the RFAA.

The guidelines note the analyses are intended to identify the economic effects of the preferred action and alternative actions, in contrast to taking “no action”, where “The types of effects to consider include the following:

1. Changes in net benefits within a benefit-cost framework;
2. Changes in the distribution of benefits and costs among groups of individuals, businesses of differing sizes, and other entities (including small communities and governmental entities);
3. Changes in income and employment;
4. Cumulative impacts of regulations; and
5. Changes in other social concerns.

More specifically, the guidelines include the following examples of the information that an RIR for commercial fishery management actions should provide:

1. Expected levels or changes in participation (number of fishing vessels) and activity (number of fishing trips, days at sea, etc.);
2. Expected levels or changes in harvests (commercial, recreational, and subsistence) and their distribution by sector;
3. Expected changes in commercial ex-vessel prices;
4. Expected changes in harvesting costs (fixed and variable costs, including capital and labor costs);
5. Expected levels and costs of processing.

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<sup>1</sup> See “Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions” (NMFS, 2007)

6. Expected changes in benefits or costs incurred by specific user groups, including effects on small entities;
7. Expected effects on employment;
8. Expected effects on profits, competitive position, productivity or efficiency of individual fishermen, user groups, or fishing communities;
9. Expected effects on the reporting burden.
10. Expected impacts on consumer surplus;
11. Expected management and implementation costs attributable to the action, including enforcement costs;
12. Expected effects on non-use values; and
13. Expected effects on fishing capacity.

The guidelines state, “The proper comparison is with the action to without the action, rather than to before and after the action, since certain changes may occur even without action and should not be attributed to the regulation. “Economic data, including cost and earnings data, and the models and analyses they support are required for more than a very superficial attempt to analyze those types of effects and to provide those types of information for the proper comparison. This conclusion applies to both quantitative and qualitative analyses intended to meet the requirements of EO 12866 and the RFA.

#### **11. NOAA Fisheries Strategic Plan 2019-2022**

NOAA Fisheries Strategic Plan 2019-2022 (Strategic Plan) addresses the importance of economic data. For example, the Mission and Mandates Section includes the following three statements concerning the requirements for economic data.

NOAA Fisheries is responsible for the stewardship of the nation’s ocean resources and their habitat. We provide vital services for the nation ... all backed by sound science and an ecosystem-based approach to management.

The U.S. science-based fishery management process, as mandated by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and other acts, is designed to provide optimum yield while preventing overfishing and taking into account the protection of habitat and marine ecosystems.

We also conduct extensive data collection programs in collaboration with states, and provide ... socioeconomic information required for the federal management of fisheries and their essential habitats.

The first two statements make it clear that: (1) NOAA Fisheries meets its stewardship responsibilities and provides vital services for the nation using sound science and an ecosystem-based approach to management and (2) a science-based fishery management process is mandated. The third statement and the separate discussions of the MSA and the NOAA Fisheries EBFM Road Map make it clear that economic data for federally managed commercial fisheries are among the information NOAA Fisheries requires for the successful implementation of a science-based ecosystem approach to management. For example, the determination of optimum yield (OY) requires economic data because the MSA defines OY partly in terms the amount of fish that will provide the greatest overall benefit to the Nation.

The Meeting the Challenges Section of the Strategic Plan lists 12 “high-priority areas of focus highlighted in this plan.” Below, we discuss two of those high-priority areas of focus and the associated need for economic data.

**Maximize the economic yield of U.S. fisheries**, enhancing the value of our fisheries to local fishing communities and the U.S. economy.

NOAA Fisheries requires economic data to determine the fishery conservation and management actions that it expects to enhance the value of our fisheries, as well as to measure and explain changes in their value.

**Integrate ecosystem considerations** into stock assessments, fishery management, and aquaculture.

As noted above and in the separate discussions of the NOAA Fisheries EBFM Road Map, EBFM, which Integrates ecosystem considerations into fishery management, requires economic data.

The Strategic Plan identifies three Plan goals and key strategies for meeting them, which provide additional information concerning the requirements for economic data.

**Goal 1: Amplify the economic value of commercial and recreational fisheries while ensuring their sustainability**

The Strategic Plan states “NOAA Fisheries expects to amplify the economic value of U.S. seafood production by optimizing commercial harvest... Effective science-based management is essential to reaching optimum yield while preventing overfishing.” Economic data are among the information NOAA Fisheries uses for effective science-based management, which includes determining the optimum commercial harvest and identifying the conservation and management actions that it expects will increase the economic value of commercial fisheries while ensuring their sustainability.

With respect to the requirements for economic data, the two most relevant key strategies for meeting Goal 1 and the identified requirements for economic data are discussed below.

**Manage stocks for Optimum Yield**

The stated strategy is to, among other things, “improve economic performance.” NOAA Fisheries requires economic data to identify OY, to identify the expected effects on economic performance of alternative conservation and management actions and to monitor and explain changes in economic performance.

**Modernize fishery information collection, management, and dissemination systems, and enhance cooperative data collection and sharing**

The stated strategy is to “Support and coordinate with states to advance user-centered fishery information networks and data platforms, with greater efficiency and lower cost, to improve the ability to effectively manage stocks. Partner with industry to supplement the collection of additional valuable data and share fishery data (as appropriate) with the public and other industry partners.” The strategy applies to a broad range of data including economic data.

**Goal 2: Conserve and recover protected species while supporting responsible fishing and resource development**

With respect to the requirements for economic data, the most relevant key strategy for meeting

Goal 2 and the identified requirements for economic data are discussed below.

### **Minimize bycatch and entanglement of protected species while supporting fisheries**

The stated strategy is to “Support continued fishing opportunities and aquaculture by understanding and minimizing protected species interactions and mortality. Work with the fishing industry, scientists, environmental organizations, academia, and other stakeholders to develop bycatch and entanglement prevention measures domestically and internationally.” The separate discussion of the National Bycatch Reduction Strategy recognizes the need for economic data to identify effective and efficient bycatch and entanglement prevention measures.

### **Goal 3: Improve organizational excellence and regulatory efficiency**

The Strategic Plan states, “Improving business processes and implementing best practices conducted in a priority-based environment, along with continuous regulatory reform, will ensure our operations best support our customers and partners.” With respect to the requirements for economic data, the three most relevant key strategies for meeting Goal 3 and the identified requirements for economic data are discussed below.

#### **Institutionalize prioritization and performance management practices**

For this key strategy, NOAA Fisheries is to “Use priority-based methodologies to optimize investments for maximum economic return while meeting conservation mandates. Analyze performance, risk and opportunities to ensure the best value to the American public.” Economic data are required to assess economic return and to analyze performance, risk and opportunities.

#### **Review agency regulations and remove or modify rules that unnecessarily burden businesses and economic growth**

To meet this key strategy, NOAA Fisheries will “Implement Executive Order 13771 by reviewing regulations to identify and modify or repeal rules that are outdated, unnecessary, or ineffective. Continue to work with the regional fishery management councils to identify additional potential flexibilities for regulated entities that maximize fishing opportunities, while continuing to meet conservation objectives.” As noted in the separate section on EO 13771, economic data are required for the effective and efficient implementation of that EO. For example, NOAA Fisheries uses economic data to estimate how alternative management actions will burden businesses and economic growth.

#### **Institutionalize the use of innovative technologies**

To meet this key strategy, NOAA Fisheries intends to “Support the development, leveraging, and use of powerful technologies (e.g., ... advanced ... electronic reporting) for ... enhancing and improving the accuracy of observing systems, and collecting and sharing data in cost-effective, transparent, and real-time approaches. Work with industry, academia, and other partners to test, deploy, and use these technologies.” Some of these technologies apply to economic data. For example, electronic reporting and observing systems, such as observer and electronic logbook programs, can be efficient methods for collecting some economic data.

## **12. EBFM Road Map**

The NOAA Fisheries Ecosystem-Based Fisheries Management (EBFM) Road Map includes many statements that demonstrate the importance of economic data, models and analyses for successfully implementing EBFM. The following are four examples of those statements.

1. NOAA Fisheries defines EBFM as “a systematic approach to fisheries management in a

geographically specified area that contributes to the resilience and sustainability of the ecosystem; recognizes the physical, biological, economic, and social interactions among the affected fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals.”

2. A national review of the data collection programs is needed across a wide range of disciplines, including but beyond the typical abundance and basic biological and catch data. For instance, needs that warrant inventory to identify gaps include ... broader economic data ...
3. NOAA Fisheries supports the consideration of and efforts to take into account various trade-offs when considering the independent and the cumulative effects of natural and human pressures on the ecosystem, including: Analyze trade-offs to optimize total benefits from all fisheries within each ecosystem or jurisdiction. This will be done by taking into account statutory mandates (e.g., MSA, Marine Mammal Protection Act (MMPA), ESA, National Aquaculture Act, etc.), regional socio-economic considerations ....
4. Evaluating cumulative impacts of proposed management actions for LMRs, their ecosystems, and associated coastal communities, as well as identifying alternative actions that achieve societal goals will further inform EBFM decisions. Cumulative and synergistic impacts are difficult to identify on a species-by-species basis, and systemic analyses will help to identify any such impacts.

### **13. National Bycatch Reduction Strategy**

The National Bycatch Reduction Strategy includes various statements that demonstrate the importance of economic data, models and analyses for reducing bycatch and discard mortality effectively and efficiently. They include the following two selected research and develop actions.

1. Improve understanding of the economic and other social factors contributing to bycatch, and identify regulatory and market incentives that might increase utilization of economic discards.
2. Assess how technology is developed and adopted in fisheries and how technological advances can affect bycatch reduction, including improvements in post-release mortality.

They also include the following two selected conserve and manage actions.

1. Analyze the effectiveness of incentive-based approaches to environmental management, (e.g., catch shares, risk pools, cooperatives, dynamic area management), and consider their application to bycatch reduction programs.
2. Improve understanding of the socio-economic, and other environmental trade-offs of bycatch reduction to better inform stakeholders and to support management decisions and postregulation analyses.

### **14. NOAA’s Catch Share Policy**

NOAA’s Catch Share Policy contains many guidance, requirements and commitment statements that NOAA Fisheries cannot meet more than superficially without basic social and economic data and the models and analyses they support. Here are three examples.

1. Councils and NOAA must establish relevant performance measures. Performance metrics for some of the typical fishery goals may include ... what were the impacts on fishing communities, participation and entry into the fishery; what happened to prices, revenues and profits.

2. Performance measures need to be linked back to the initial objectives in a FMP. Many current FMPs have general and sometimes vague objectives. Objectives for biological, economic and social outcomes should be readily measurable, such as ... improving socio-economic conditions for fishery participants and/or fishery-dependent communities.
3. Catch shares can result in fishery improvements in many areas but the metrics chosen to monitor performance should not be limited by the current availability of data. It is important to ensure in the catch share design stage that share holders will supply relevant data to monitor program performance in return for their allocation. This includes obtaining more specific biological and economic performance data from the participants, all in accordance with applicable law governing maintenance of business trade secrets and confidentiality of data.