

1.1 DRAFT FRAMEWORK 28 ECONOMIC IMPACTS

The following sections analyze the economic impacts of the management alternatives considered in Framework 28 and compare these with two baselines, No Action alternative and Status Quo scenario. The objective of the cost-benefit analysis is to evaluate the net economic benefits arising from changes in consumer and producer benefits that are expected to occur with implementation of a regulatory action. As the NMFS Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007) ¹ 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.” The guidelines also state that “No Action alternative does not necessarily mean a continuation of the present situation, but instead is the most likely scenario for the future, in the absence of other alternative actions”². Even without action, the scallop stock abundance in open and access areas will be different, and as a result, landings, scallop prices, fishing costs, revenues and benefits from the fishery would change compared to the present levels. The Status Quo scenario as projected in this Framework action reflects this reality and, in addition to the No Action alternative, is used as one of the baselines to assess economic impacts of the proposed measures especially for the purposes of E.O.12866.

While NMFS 2007 guidelines indicate “The No Action alternative should be the basis of comparison for other alternatives”, it very often use the terms “No Action” and “Status Quo” interchangeably³. The economic analyses presented in this section make a distinction in the definition of those terms, however, with “No Action” referring to a “regulatory” baseline and “Status Quo” referring to a state with no changes from the present allocations for open area DAS and access area trips. The definition of “No Action” as described in Section 2.2.1.1 of the document refers to the default measures that are specified in Framework 27 until the next Framework action is implemented. No Action alternative is used as one of the baselines for comparison of the biological and economic impacts of the proposed specification measures to those of default measures in accordance with the NMFS guidelines.

However, as discussed in detail in Section 1.1.3 below, default measures are temporary in nature and as such, allocations under those measures are usually set at considerably lower levels than the allocations either in the current (in 2016) or the projected allocations in the next fishing year (2017) to prevent fishing effort exceeding the sustainable levels due to the delays in the implementation of the proposed measures in next Framework Action. As a result, the projections for landings, revenues and economic benefits under the No Action alternative are considerably lower than the current levels and the levels that are expected under the proposed measures. Because of this, when economic benefits of the proposed alternatives are estimated using No

¹ Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions, March 2007, http://www.nmfs.noaa.gov/sfa/domes_fish/EconomicGuidelines.pdf

² Ibid, p.12

³For example, see p. 15 of 2007 NMFS guidelines: “For economic analysis of regulatory actions, changes in net benefits are measured by the difference in the present value of the discounted stream of net benefits of regulatory action, as compared to the status quo. In this context, a positive result means that the net present value of the regulatory action exceeds that of the status quo.”

Action as the baseline, the impacts on the economy are overstated in the short-term compared to the present circumstances.

OMB recommends using more than one baseline when the choice of baseline will significantly affect estimated benefits and costs.⁴ For these reasons, the economic analyses in this framework also include a Status Quo scenario (*SQ*) to provide an assessment of how landings, revenues and total economic benefits from the scallop fishery would change if the current allocations were continued in 2015 but taking into account the impacts of projected changes in the productivity and the spatial distribution of the scallop resource on landings, revenues and total economic benefits. From that perspective, *SQ* is a more realistic baseline to assess the impacts of the proposed measures on the economy from the perspective of E.O.12866. Section 1.1.3 provides a description of the Status Quo scenario and discusses the implications of using the No Action and *SQ* scenarios as baselines to evaluate the economic benefits of the proposed measures.

As the Guidelines for Economic Analysis of Fishery Management Actions specify, “benefits and costs are measured from the perspective of the Nation, rather than from that of private firms or individuals. Benefits enjoyed by other nations are not included, although tax payments by foreign owners, and export revenues, are benefits to the Nation.”

Because fishery management actions in general result in short-term costs for the industry in terms of foregone revenue, “choosing a period of analysis that is too short may bias the analysis toward costs, where costs are incurred in the short-term and benefits are realized later.”

Similarly, the Office of Management and Budget (OMB, 2003) indicated that the analyses should “present the annual time stream of benefits and costs expected to result from the rule,” and state that “the beginning point for your stream of estimates should be the year in which the final rule will begin to have effects” and “the ending point should be far enough in the future to encompass all the significant benefits and costs likely to result from the rule.”⁵ For these reasons, guidelines indicate that “a reasonable attempt should be made to conduct the analysis over a sufficient period of time to allow a consideration of all expected effects.”

Furthermore, the economic impacts of the proposed regulations over the long-term should be evaluated by the discounted cumulative present value of the stream of benefits since benefits or costs that occur sooner are generally more valuable (or have a positive time preference). Discount rate is the interest rate used in calculating the present value of expected yearly benefits and costs.

This section examines the economic impacts of the proposed regulations in Framework 28. Although Framework 28 is a one year action, it will have impacts on the future yield from scallop resources, on scallop revenues and total economic benefits. The short- and the long-term economic impacts of the specification alternatives are analyzed in Section 1.1.3. The present value of long-term benefit and costs of the specification alternatives are estimated using both a 3% and a 7% discount rate. The higher discount rate provides a more conservative estimate and a lower bound for the economic benefits of alternatives compared with the benefits predicted using a lower discount rate.

⁴ Circular A-4, September 17, 2003, http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

⁵ OMB Circular A-4 (September 17, 2003), http://www.whitehouse.gov/omb/circulars_a004_a-4/

1.1.1 Acceptable Biological Catch (Section 2.1.)

1.1.1.1 No Action ABC (2.1.1)

Reauthorization of the MSA requires the SSC to set an acceptable biological catch (ABC), or maximum catch level that can be removed from the resource taking into account all sources of biological uncertainty. The Council is prohibited from setting catch limits above that level. This requirement is expected to have long-term economic benefits on the fishery by helping to ensure that catch limits and fishing mortality targets are set at or below ABC. This should help prevent overfishing and optimize yield on a continuous basis. Under “No Action” for FY 2017, the overall ABC for each year would be identical to that of the default FY 2017 ABC for the fishery. No Action ABC (37,852 mt.) after discards removed is about 23% lower than the proposed ABC in this action because biomass has increased from 2016 levels. Therefore, the potential impacts of the No Action ABC on economic benefits are negative.

1.1.1.2 Alternative 2 - ABC for 2017 and default for 2018

The updated ABC estimates (46,737 mt. after discards removed) for 2017 are about 23% higher and the default ABC estimates for 2018 (43,142 mt.) are about 14% higher than the No Action values because updated surveys suggest scallop biomass is higher than previous estimates. Overall, using these estimates to set fishery specifications should have positive economic impacts over the long-term because the ABC values were determined based on the recent surveys and best available science to prevent overfishing of the scallop resource.

1.1.2 Northern Gulf of Maine TAC

1.1.2.1 Alternative 1 – No Action (70,000 lb. TAC)

Under all alternatives including no Action, proposed TAC levels will be 20,000 lb. lower after deducting the overage from FY2015 and FY2016. Therefore, the realized TAC under this option would likely be around 50,000 lbs. In 2016 fishing year, LAGC IFQ/NGOM fishery landings were about 87,103 lb. As a result, scallop landings for the LAGC fishery would be lower under this alternative than the amounts in 2016 fishing year and also lower than what could be supported by the scallop resource in this area based on the 2016 surveys. Therefore, No Action alternative will have negative economic impacts on the vessels with NGOM permits.

1.1.2.2 Alternative 2 – NGOM TAC based on survey and catch data

This alternative would set the NGOM TAC levels taking into account the ME DMR survey results indicating that the biomass has increased in the NGOM area. With sub-option 1 (Section 2.2.2.1), of 95,000 lb., realized TAC will equal to 75,000 lb. after removal of 20,000 lb. overage from the last two fishing years. With sub-option 2 (Section 2.2.2.2), TAC would be set at 111,000 lb. and realized TAC will be 91,000 lb. Both of these options will have positive economic impacts compared to No Action alternative. Sub-option 1 would increase landings and revenues for the NGOM fishery by 50% and sub-option 2 would increase landings and revenues by 82% from the levels under No Action alternative. However, under sub-option 1 landings would still be less than the landings in 2016 fishing year, while under sub-option 2 they will be slightly higher than 2016 levels. Therefore, economic benefits of sub-option 2 will exceed the benefits for sub-option 1.

1.1.3 Economic impacts of the Framework 28 specification and spatial management alternatives

1.1.4.1 Proposed specification alternatives, No Action and Status quo

Framework 28 includes two alternatives in specifying allocations for the LAGC IFQ. With the status quo specification, The LAGC IFQ component would receive 5.5% of the ACL. The LA component would be based on projected landings for the fishing year, after accounting for the research set-aside, observer set-aside, incidental landings, and the LAGC IFQ share (5.5% of the ACL). With the spatial management alternative, the LA component would receive 94.5% of the projected landings from areas open to the fishery, and the LAGC IFQ component would receive 5.5% of the projected landings from areas open to the fishery, after set-asides (RSA and observer) and incidental landings are accounted for.

Framework 28 also includes several specification alternatives with different open area DAS and access area allocations in addition to the “No Action” alternative (ALT1), Basic Run with status quo IFQ allocations (ALT2) and spatial management allocation (ALT3), Basic Run with open area $F=0.4$ (ALT4), and options with NLS extension (ALT5), Elephant Trunk area closed flex options (ALT6 and ALT7) described in Table 1. The biological model projected landings, LPUE and size composition of landings for each of these alternatives for 2017-2031. These projections were then used as inputs in the economic model to estimate prices, revenues, costs, producer and consumer surpluses and total economic benefits from the scallop fishery. The impacts of alternatives on individual vessels are expected to be proportional to the aggregate impacts on revenues, fishing costs and net revenues (producer surplus). The economic impacts of these alternatives in combination with various specification options are summarized Table 2 and Table 3 below and the impacts on the IFQ fishery is analyzed in Section 1.1.5.1

Following the 2007 NMFS Guidelines for the Economic Analysis of the Fishery Management Action (NMFS, 2007) ⁶, the biological and economic impacts of the proposed alternatives are compared in this Section to the “No Action” (i.e., temporary default measures) alternative as defined in Section 2.1.2.1 of the document. They were also compared to the projected economic impacts under the Status Quo alternative to provide a more realistic estimate of the impacts on the overall economy. Furthermore, those estimates were presented in the majority of Tables in 2016 dollars to provide insight for the managers and the industry participants about the impacts of the proposed measure relative to the current values. They were also summarized in terms of constant 2001 dollars to be consistent with the requested format in OMB Circular A-4 and in assessing the regulatory significance under E.O.12866.⁷

The definition of “No Action” in this document follows a regulatory approach and refers to the default measures specified in Framework 27 until the next Framework action is implemented in 2016. Default measures are designed to provide some level of fishing access at the start of a

⁶ Guidelines for Economic Reviews of National Marine Fisheries Service Regulatory Actions, March 2007, http://www.nmfs.noaa.gov/sfa/domes_fish/EconomicGuidelines.pdf

⁷ Page 32 of Circular A-4 (2003) states that: “In presenting the stream of benefits and costs, it is important to measure them in constant dollars to avoid the misleading effects of inflation in your estimates”, and page 45 states that: “Please report all monetized effects in 2001 dollars. You should convert dollars expressed in different years to 2001 dollars using the GDP deflator”.

subsequent fishing year in the event that new fishery specifications are not in place. Therefore, the “No Action” alternative does not reflect, a “state” or baseline that correspond to the same amount of fishing effort in the current year (2016), but rather it provides a literal interpretation of “what is likely to occur” if there is a delay in the implementation of the new regulations. As a result, total landings for No Action are estimated to be about 35.6 million lb. in 2017.

OMB recommends using more than one baseline when the choice of baseline will significantly affect estimated benefits and costs.⁸ For these reasons, the economic analyses provided for this framework also includes a Status Quo scenario (SQ) to reflect the changes in landings and economic benefits as a result of projected changes in the scallop resource stock and the composition of landings. In contrast to the “No Action” alternative that defines the baseline using a literal interpretation from regulatory perspective, the Status Quo (SQ) scenario provides a better assessment of what would happen in terms of landings, revenues and total economic benefits from the scallop fishery if the current level of allocations (in 2016) were continued in 2017 taking into account recent changes in the productivity and the spatial distribution of the scallop resource.

1.1.4.2 Default measures for 2018

The Scallop Committee recommends that default measures for the limited access fishery include DAS at 75% of the projected DAS allocation for 2017, and one access area trip in the MAAA at 18,000 for FT LA vessels. The Scallop Committee also recommends that LAGC IFQ allocations be set at 75% of the 2017 quota at the start of the fishing year, and that LAGC IFQ access area trips be set at 5.5% of the total access area allocation for default measures. These trips would only be available in the MAAA.

The default measures allow reduced levels of access to the fishery at the start of the year with the intent that additional allocations are provided later in the fishing year under a subsequent action. Because these measures are expected to prevent fishing effort exceeding the sustainable levels and the potentially negative impacts on the resource and scallop yield until the next Framework Action is in place, they will have positive economic benefits for the scallop fishery in the long-term.

1.1.4.3 Summary of the economic impacts of the proposed specification alternatives

The economic impacts of the proposed specification alternatives are summarized in Table 2 and Table 3 below compared to both Status Quo (SQ) scenario and No Action (ALT1). It is important to point out that SQ is not an alternative under consideration for selection in this action, but was developed by the PDT to reflect another baseline to be used to evaluate the economic impacts of the proposed alternatives if there were no changes in the open area DAS (34.55 per FT vessels) and access area (3 trips to Megatron) allocations from the levels in 2016 fishing year. No Action (ALT1) allocations would be equivalent to the defaults measures set in Framework 28, i.e., open area DAS allocations would equal 34.55 days-at-sea per full-time vessels, and LA vessels would have one trip allocated for the MAAA access area. Table 1 provides a description of the alternatives considered in Framework 28 and Table 2 and Table 3

⁸ Circular A-4, September 17, 2003, http://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf

provides the summary of economic impacts for 2017 and for the long-term period from 2017-2031.

Table 1. Framework 28 projections with alternative specifications

ALT1 - No Action – Default measures set in Framework 28	34.55 open area DAS, 1 Megatron trip, LAGC IFQ allocation=4.5 mill.lb.
ALT2 - Basic Run – IFQ allocations=5.5% of ACL	30 DAS, LAGC IFQ allocation=5.5 mill.lb.
ALT3 – Basic Run – IFQ Allocations= 5.5% of Projected landings (Same for Basic Run+ ETC Flex at 30 DAS)	30 DAS, LAGC IFQ allocation=2.6 mill. lb.
ALT4 – Basic Run with Open area F=0.4, IFQ Allocations= 5.5% of Projected landings (Same for Basic Run+ETC Flex at F=0.4)	27.56 DAS, LAGC IFQ allocation=2.5 mill. lb.
ALT5 – Basic Run with NLS extension+ETC Flex (F=0.44), IFQ Allocations= 5.5% of projected landings	29.20 DAS, LAGC IFQ allocation=2.4 mill. lb.
ALT6 –ETC Flex – IFQ Allocations= 5.5% of Projected landings	30 DAS, LAGC IFQ allocation=2.6 mill.
ALT7 –ETC Flex – IFQ Allocations= 5.5% of ACL	30 DAS, LAGC IFQ allocation=5.5 mill.
SQ - Status Quo scenario	34.55 open area DAS, 3 Megatron trips, LAGC IFQ allocation=4.5 mill.lb.

Economic impacts of the Framework 28 alternatives could be summarized as follows:

- Landings, revenues, producer surplus and total economic benefits for all alternatives other than ALT (NLS ext.) and No Action, are estimated to exceed the SQ levels both in 2017 as well as over the long-term. Although landings for ALT4 (Basic Run, F=0.4) are projected to be slightly lower (by 0.4 million lb.), in 2017 compared to landings under SQ, due to higher prices under this alternative, revenues and economic benefits would be still higher than SQ levels (Table 2). However, with ALT5 (NLS ext., F=0.44), although open area DAS allocation would be slightly higher compared to ALT4 (OpF=0.40), landings would be slightly lower (by about 800,000 lb.) under this alternative due to lower LPUE in the open areas with this alternative. As a result, ALT5 is the only alternative that would have lower revenues compared SQ values.
- Landings with spatial management specifications for IFQ fishery would be about 3.2 million lb. lower in 2017 compared to status quo specifications. For this reason, total scallop revenues with the status quo ACL management for IFQ fishery (ALT2- Basic Run GCSQ) would exceed the revenues under the spatial specification alternatives ALT3 (Basic Run GSP- with spatial management) by about \$27.7 million in 2017. Total

economic benefits would be at least \$30 to \$50 million higher as well for ALT 2 and ALT 7 compared to ALT3, ALT4, ALT5 and ALT6 in the short-term (Table 2).

- Among the alternatives that would allocated 5.5% of projected landings to the IFQ fishery, ALT6 (ETC, 30 DAS) and ALT3 (Basic Run, 30 DAS) would result in highest revenues and total economic benefits compared to ALT4 and ALT5 in the short-term. Scallop revenues for ALT3 and ALT6 would exceed SQ values by about \$50 million in, while revenues for ALT3 would exceed SQ revenues by about \$4.8 million and revenues for ALT would be about \$1.6 million lower than SQ levels in 2017. Similarly, total economic benefits for ALT3 and ALT6 would exceed SQ values by about \$60 million in, revenues for ALT3 would exceed SQ revenues by about \$about \$9.3 million and revenues for ALT4 would be about \$1.6 million higher than SQ levels in 2017(Table 2).
- Long-term cumulative landings (for 15 years from 2017 to 2031) would be marginally lower (by 0.5 million) with spatial management specifications (IFQ allocations - 5.5% of the projected landings) compared to status quo IFQ management (5.5% of ACL, Table 2). As a result, present value of the long-term cumulative revenues and total economic benefits would be higher for ALT2 and ALT7 compared to other alternatives by about \$10 to \$20 million depending on the discount rate used to estimate future benefits.
- Revenues and economic benefits would be similar for Basic Run (ALT3) and ETC alternative (ALT6), over the long-term as well. Cumulative present value of total economic benefits under these alternatives would exceed SQ benefits by about \$24 million (\$35 million) over 2017-2031 using a discount rate of 3% (7%). ALT4 (OpF=0.4) and ALT5 (NLS ext.) would have the lowest increase in revenues compared to SQ levels both in the short- and the long-term. Cumulative present value of total economic benefits under these alternatives would exceed SQ benefits by about \$27 million (\$30 million) over 2017-2031 using a discount rate of 3% (7%). Therefore, long-term differences in the present value of the cumulative revenues of these alternatives are expected to be small are small, ranging from \$2 million to \$5 million for the alternatives with spatial management of IFQ allocations (5.5% of projected landings). However, the long-term economic benefits for status quo management (5.5% of ACL, ALT 2 and ALT 7) alternatives would exceed the long-term economic benefits for spatial management (5.5% of projected landings) alternatives by about \$10 to \$20 million (Table 3). It should be cautioned, however, that all estimates are point values subject to variation and increased uncertainty over the long-term. When these uncertainties in estimation of future scallop biomass and yield are taken in to account, it would be reasonable not to give too much weight to the rather small long-term differences in economic benefits of these options.
- It must be also cautioned that actual revenues for ETC Flex options could be higher than estimated in Table 1 and Table 2 because biological model maybe underestimating the abundance of large scallops in that area. The economic model estimates are based on size categories that are generated through the SAMS model. The SAMS model may be

underestimating the growth potential of the animals in this area and observed growth of shell height and meat weight in this area are generally higher in this area than other areas.

Table 2 - Economic Impacts for 2017: Estimated landings (Mill.lb.), revenues and economic benefits (Mill. \$, in 2016 dollars)

Values	SQ	1. No Action	2. Basic Run GCSQ	3. Basic Run GCP	4. OpF=0.4	5. NLS ext	6.ETC	7.ETCG CSQ
FT LA Open area DAS	34.5	34.5	30.0	30.0	27.6	29.2	30.0	30.0
Prices (\$ per lb.)	11.90	12.66	11.78	11.99	12.11	12.2	11.99	11.79
Total landings (Mill. lb.)	47.7	35.6	52.4	49.2	47.3	46.5	49.2	52.4
Difference from SQ		-12.0	4.8	1.5	-0.4	-1.2	1.5	4.8
Difference from No Action	12.0		16.8	13.6	11.6	10.9	13.6	16.8
Total revenue (Mill. \$)	567.5	451.0	617.7	590.0	572.3	565.9	590.2	618.0
Difference from SQ		-116.5	50.2	22.5	4.8	-1.6	22.7	50.5
Difference from No Action	116.5		166.7	138.9	121.3	114.9	139.1	166.9
Producer Surplus (Mill. \$)	535.0	425.6	586.7	561.0	544.8	538.4	561.7	587.5
Difference from SQ		-109.4	51.7	26.0	9.8	3.4	26.7	52.5
Difference from No Action	109.4		161.1	135.4	119.2	112.8	136.1	161.9
Total Economic Benefits (Mill. \$)	583.7	454.4	644.9	612.9	593.0	585.3	613.6	645.7
Difference from SQ		-129.3	61.2	29.2	9.3	1.6	29.9	62.0
Difference from No Action	129.3		190.5	158.5	138.6	130.9	159.2	191.3

Table 3 - Long-term Economic Impacts (2017-2031): Cumulative present value of revenues, producer surplus and total economic benefits *net of No action and net of Status quo* values (in 2016 dollars)

Values	SQ	1. No Action	2. Basic Run-GCSQ	3. Basic Run GCP	4. OpF=0.4	5. NLS ext	6.ETC	7.ETCG CSQ
Total landings (Mill. lb.)	934.6	932.0	937.9	937.4	937.4	937.7	937.7	938.3
Difference from SQ		-2.6	3.4	2.8	2.8	3.2	3.1	3.8
Difference from No Action	2.6		6.0	5.4	5.4	5.7	5.7	6.3
At 3% discount rate								
Total revenue (Mill. \$)	8650.7	8590.3	8685.3	8673.8	8668.4	8667.8	8674.4	8686.5
Difference from SQ		-60.4	34.6	23.1	17.8	17.1	23.7	35.8
Difference from No Action	60.4		95.0	83.6	78.2	77.5	84.1	96.2
Producer Surplus (Mill. \$)	8210.4	8152.9	8244.6	8234.1	8229.4	8228.1	8234.6	8245.8
Difference from SQ		-57.5	34.2	23.7	19.0	17.8	24.2	35.4
Difference from No Action	57.5		91.7	81.2	76.5	75.2	81.7	92.9
Total Economic Benefits (Mill. \$)	9223.8	9168.8	9264.8	9254.3	9250.6	9250.5	9255.2	9266.6
Difference from SQ		-55.0	41.0	30.5	26.9	26.7	31.4	42.9
Difference from No Action	55.0		96.0	85.6	81.9	81.7	86.4	97.9
At 7% discount rate								
Total revenue (Mill. \$)	6893.7	6827.7	6933.4	6920.2	6913.7	6913.4	6920.9	6934.8
Difference from SQ		-66.0	39.7	26.4	20.0	19.6	27.1	41.0
Difference from No Action	66.0		105.7	92.4	86.0	85.6	93.1	107.0
Producer Surplus (Mill. \$)	6541.7	6479.1	6581.1	6568.9	6563.2	6562.3	6569.6	6582.5
Difference from SQ		-62.7	39.3	27.2	21.4	20.5	27.9	40.7
Difference from No Action	62.7		102.0	89.9	84.1	83.2	90.6	103.4
Total Economic Benefits (Mill. \$)	7360.5	7298.2	7407.9	7395.2	7390.1	7390.3	7396.3	7410.0
Difference from SQ		-62.4	47.4	34.6	29.5	29.8	35.7	49.4
Difference from No Action	62.4		109.8	97.0	91.9	92.1	98.1	111.8

1.1.4.4 Estimates for Landings, LPUE, Price and Revenue, Producer and Consumer surplus and Total Economic Benefits by Fishing Year

Table 4. Estimated landings (Million lb.)

Period	Fish Year	SQ	1. No Action	2. Basic Run GCSQ	3. Basic Run GCP	4. Op.F=0.4	5. NLS ext	6.ETC	7.ETCGC SQ
2017-2018	2017	47.7	35.6	52.4	49.2	47.3	46.5	49.2	52.4
	2018	67.2	69.7	68.5	69.2	69.9	71.7	69.5	68.9
2017-2018 Total		114.9	105.4	120.9	118.4	117.1	119.5	118.2	121.3
2019-2021	2019	81.0	83.5	82.2	82.8	83.3	83.1	82.8	82.2
	2020	82.3	84.0	81.7	82.2	82.5	82.2	82.1	81.6
	2021	71.1	72.3	70.4	70.8	71.0	70.9	70.8	70.5
2019-2021 Total		234.4	239.8	234.3	235.8	236.8	234.8	236.2	234.3
2022-2031	2022	64.6	65.3	64.0	64.2	64.3	64.3	64.2	64.0
	2023	61.6	61.9	61.0	61.1	61.2	61.2	61.1	61.0
	2024	60.6	60.8	60.2	60.2	60.2	60.2	60.2	60.1
	2025	59.2	59.3	58.9	58.9	58.9	58.9	58.9	58.8
	2026	57.7	57.7	57.4	57.5	57.5	57.5	57.5	57.4
	2027	57.0	57.0	56.8	56.9	56.9	56.9	56.9	56.8
	2028	56.4	56.4	56.3	56.4	56.4	56.4	56.4	56.3
	2029	56.0	56.1	56.0	56.0	56.0	56.0	56.0	56.0
	2030	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0
	2031	56.2	56.2	56.2	56.1	56.1	56.1	56.1	56.2
2022-2031 Total		585.2	586.8	582.7	583.2	583.5	583.1	583.3	582.7
Grand Total		934.6	932.0	937.9	937.4	937.4	937.7	937.7	938.3

Table 5. Landings per pound of scallops (LPUE)

Period	Fish Year	SQ	1. No Action	2. Basic Run GCSQ	3. Basic Run GCP	4. OpF=0.4	5. NLS ext	6.ETC	7.ETCGC SQ
2017-2018	2017	2240	2139	2580	2593	2620	2635	2627	2582
	2018	2707	2709	2680	2685	2694	2681	2675	2704
2017-2018 average		2474	2424	2630	2639	2657	2658	2651	2643
2019-2021	2019	2842	2847	2813	2817	2821	2809	2805	2821
	2020	2935	2949	2903	2906	2907	2902	2899	2907
	2021	2896	2906	2869	2871	2872	2866	2863	2869
2019-2021 average		2891	2901	2862	2865	2867	2859	2856	2866
2022-2031	2022	2777	2785	2757	2758	2759	2755	2753	2756
	2023	2695	2701	2680	2682	2682	2680	2679	2680
	2024	2664	2667	2654	2654	2654	2654	2653	2654
	2025	2646	2648	2638	2639	2639	2638	2638	2638
	2026	2618	2619	2612	2612	2612	2612	2612	2612
	2027	2601	2601	2597	2597	2597	2596	2597	2596
	2028	2592	2592	2589	2589	2589	2589	2589	2589
	2029	2587	2587	2585	2584	2584	2584	2585	2584
	2030	2582	2582	2581	2580	2580	2580	2581	2580
	2031	2586	2586	2585	2584	2584	2584	2585	2584
2022-2031 average		2635	2637	2628	2628	2628	2627	2627	2627
Grand Total		2665	2661	2675	2677	2680	2678	2676	2677

Prices are estimated using the ex-vessel price model that takes into account the impacts of changes in meat count, domestic landings, exports, import prices, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on under count 10 scallops.

The price estimates shown in Table 7 correspond to the price model outputs assuming that the import prices will be constant at their 2016 levels, scallop exports will constitute about 40% of the domestic landings and the disposable income will be constant at the current levels in 2016, so that only the effects of the reduction in and changes in the size composition of landings could be identified. In additions, price estimates reflect real (as opposed to nominal) prices since they are expressed in 2016 constant prices assuming inflation will be zero in the future years. Therefore, actual real or nominal prices could be higher (lower) than the values estimated in Table 7 if the import prices, exports and disposable income increase (decrease) in the future years. Nominal prices will probably higher in the future as well since it is unusual for the inflation to remain at zero. In addition, ex-vessel prices could be underestimates of true values because the biological

model underestimates the proportion of U10s in landings and it doesn't have a separate category for U12 scallops.

Although the absolute values for revenues, producer and consumer surpluses, and total economic benefits would change with the value of estimated prices, the percentage differences of these values for alternatives, ALT2 to ALT7 relative to the No Action or Status Quo scenarios would not change in any substantial way. Higher prices than estimated in Table 7 would increase the short-term positive impact of all the alternatives on revenues compared to No Action, while lower prices would reduce this impact. The long-term benefits will be greater with higher prices and smaller with lower prices.

Table 6. Estimated ex-vessel prices (in 2016 dollars)

Period	Fish Year	SQ	1. No Action	2. Basic Run GCSQ	3. Basic Run GCP	4. OpF=0.4	5. NLS ext	6.ETC	7.ETCGC SQ
2017-2018	2017	11.90	12.66	11.78	11.99	12.11	12.17	11.99	11.79
	2018	10.86	10.72	10.78	10.74	10.70	10.59	10.72	10.75
2017-2018		11.38	11.69	11.28	11.36	11.40	11.38	11.35	11.27
2019-2021	2019	10.18	10.05	10.11	10.08	10.05	10.06	10.08	10.11
	2020	10.22	10.12	10.23	10.20	10.19	10.20	10.20	10.23
	2021	10.88	10.81	10.90	10.88	10.87	10.87	10.87	10.89
2019-2021		10.43	10.33	10.41	10.39	10.37	10.37	10.38	10.41
2022-2031	2022	11.25	11.21	11.27	11.26	11.25	11.25	11.25	11.26
	2023	11.41	11.39	11.43	11.42	11.42	11.42	11.42	11.42
	2024	11.45	11.44	11.47	11.46	11.46	11.46	11.46	11.46
	2025	11.53	11.52	11.54	11.54	11.54	11.54	11.54	11.54
	2026	11.61	11.61	11.62	11.62	11.62	11.62	11.62	11.62
	2027	11.65	11.65	11.65	11.65	11.65	11.65	11.65	11.65
	2028	11.68	11.67	11.68	11.68	11.68	11.68	11.68	11.68
	2029	11.69	11.69	11.70	11.70	11.70	11.70	11.70	11.70
	2030	11.69	11.69	11.70	11.69	11.69	11.69	11.69	11.70
	2031	11.68	11.68	11.68	11.68	11.68	11.68	11.68	11.68
2022-2031 average		11.56	11.55	11.57	11.57	11.57	11.57	11.57	11.57
2017-2031 average		11.31	11.33	11.30	11.31	11.31	11.30	11.30	11.30

Table 7. Scallop revenue (Million \$, in 2016 dollars, not discounted)

Period	Fish Year	SQ	1. No Action	2. Basic Run GCSQ	3. Basic Run GCP	4. OpF=0.4	5. NLS ext	6.ETC	7.ETCGC SQ
2017-2018	2017	568	451	618	590	572	566	590	618
	2018	729	747	738	743	748	760	745	741
2017-2018 Total		1297	1198	1355	1333	1320	1344	1326	1359
2019-2021	2019	825	839	831	835	837	836	834	831
	2020	841	851	835	839	840	838	838	834
	2021	774	781	768	770	772	771	770	768
2019-2021 Total		2440	2471	2434	2443	2449	2437	2445	2433
2022-2031	2022	727	732	721	722	723	723	722	721
	2023	702	705	697	698	699	698	698	697
	2024	694	695	690	690	691	690	690	690
	2025	682	683	679	679	680	679	679	679
	2026	670	670	668	668	668	668	668	668
	2027	664	664	662	663	663	663	663	662
	2028	659	659	658	658	658	658	658	658
	2029	655	656	655	655	655	655	655	655
	2030	655	655	655	655	655	655	655	655
	2031	656	656	656	656	656	656	656	656
2022-2031 Total		6764	6775	6740	6744	6746	6743	6745	6740
Grand Total		10500	10445	10530	10520	10516	10515	10521	10531

Producer surplus (benefits) for a particular fishery shows the net benefits to harvesters, including vessel owners and crew, and is measured by the difference between total revenue and operating costs. Opportunity costs of labor is also deducted in estimating producer surplus but not the opportunity cost of capital. Therefore, values provided in Table 8 are used as a proxy for producer surplus because opportunity cost of capital is not expected to vary from one alternative to another in any substantial way. Producer surplus is not equivalent to profits since fixed costs and opportunity costs of capital are not deducted from the revenues.

Consumer surplus for a particular fishery is the net benefit that consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline and/or the amount of fish harvested goes up. Present value of the consumer surplus (using a 7% discount rate), and the cumulative present values net of Status Quo levels are summarized in Table 9.

Economic benefits include the benefits both to the consumers and to the fishing industry, and equal the sum of benefits to the consumers and producers. The cumulative present value of the total benefits are and economic benefits net of Status Quo (SQ) levels are shown in Table 10 (7% discount rate).

Table 8. Present value of producer surplus (using 7% discount rate, Million \$, in 2016 dollars)

Period	Values	SQ	1. No Action	2. Basic Run-GCSQ	3. Basic Run-GCP	4.OpF=0.4	5.NLS ext	6.ETC	7.ETC GCSQ
2017	Producer surplus	568	451	618	590	572	566	590	618
	PS net of SQ		-116	50	22	5	-2	23	50
	PS net of No Action	116		167	139	121	115	139	167
2018	Producer surplus	682	698	689	694	699	710	696	692
	PS net of SQ		17	8	12	17	28	14	11
	PS net of No Action	-17		-9	-4	0	12	-2	-6
2019-2021	Producer surplus	1997	2024	1994	2001	2006	2002	2000	1992
	PS net of SQ		26	-4	4	9	5	2	-5
	PS net of No Action	-26		-30	-23	-17	-21	-24	-31
2022-2031	Producer surplus	3647	3655	3632	3635	3636	3635	3635	3632
	PS net of SQ		8	-15	-12	-11	-12	-12	-15
	PS net of No Action	-8		-22	-20	-18	-19	-20	-23
Producer surplus		6894	6828	6933	6920	6914	6913	6921	6935
PS net of SQ			-66	40	26	20	20	27	41
PS net of No Action		66		106	92	86	86	93	107

Table 9. Present value of consumer surplus (CS) using 7% discount rate (in 2016 dollars, Million \$)

Period	Values	SQ	1. No Action	2. Basic Run-GCSQ	3. Basic Run-GCP	4.OpF=0.4	5.NLS ext	6.ETC	7.ETC GCSQ
2017	Consumer surplus	49	29	58	52	48	47	52	58
	CS net of SQ		-20	9	3	0	-2	3	9
	CS net of No Act.	20		29	23	19	18	23	29
2018	Consumer surplus	84	90	87	89	90	94	89	88
	CS net of SQ		6	3	4	6	10	5	4
	CS net of No Act.	-6		-3	-1	0	5	-1	-2
2019-2021	Consumer surplus	296	308	295	298	301	299	298	295
	CS net of SQ		12	0	3	5	4	3	-1
	CS net of No Act.	-12		-13	-9	-7	-8	-10	-13
2022-2031	Consumer surplus	390	393	386	387	388	387	387	386
	CS net of SQ		2	-4	-3	-3	-3	-3	-4
	CS net of No Act.	-2		-6	-5	-5	-5	-5	-6
Consumer surplus		819	819	827	826	827	828	827	828
CS net of SQ			0	8	7	8	9	8	9
CS net of No Act.		0		8	7	8	9	8	8

Table 10. Present value of total economic benefits (TB) using 7% discount rate (in 2016 dollars, Mill. \$)

Period	Values	SQ	1. No Action	2. Basic Run - GCSQ	3. Basic Run - GCP	4.OpF= 0.4	5.NLS Ext.	6.ETC	7.ETC GCSQ
2017	Total Benefits (TB)	584	454	645	613	593	585	614	646
	TB net of SQ		-129	61	29	9	2	30	62
	TB net of No Act.	129		191	159	139	131	159	191
2018	Total Benefits (TB)	731	752	740	746	752	767	749	743
	TB net of SQ		21	9	15	21	36	18	13
	TB net of No Act.	-21		-12	-6	0	15	-3	-8
2019-2021	Total Benefits (TB)	2191	2228	2186	2196	2203	2198	2194	2184
	TB net of SQ		36	-5	5	12	7	3	-7
	TB net of No Act.	-36		-41	-31	-24	-30	-33	-43
2022-2031	Total Benefits (TB)	3855	3865	3837	3840	3842	3840	3840	3836
	TB net of SQ		10	-18	-15	-13	-15	-15	-18
	TB net of No Act.	-10		-28	-24	-23	-24	-25	-28
Total Benefits (TB)		7361	7298	7408	7395	7390	7390	7396	7410
TB net of SQ			-62	47	35	30	30	36	49
TB net of No Act.		62		110	97	92	92	98	112

1.1.5 Economic impacts of specification and access area alternatives for the LAGC fishery

1.1.5.1 Applying Spatial Management to the Specification Setting process (ACL Flowchart)

Under the No Action and Status Quo alternatives with IFQ allocations set at 5.5% of ACL, IFQ quota including the LA vessels with IFQ permits will be equivalent to the default allocations set in Framework 28 (4,473,180 lb., Table 11). If the IFQ quota specifications were set at 5.5% of ACL under ALT2 (Basic Run) or ALT7 (ETC) options with 30 DAS, Total IFQ quota will be about 5,538,005, exceeding the default allocations by 23.8% (Table 12).

. The status quo method of allocation would increase the share of IFQ fishery in total landings to over 11.4% of the total landings. As a result, the economic impacts on the LAGC IFQ fishery would be positive compared to no action and status quo scenario. With the spatial management specification setting, however, LAGC-IFQ quota would be equivalent to 5.5% of the projected landings. This would result in a reduction IFQ quota by 40% to 45% from the 2017 default values (Table 11 and Table 12).

Table 11. IFQ quota under specification alternatives for 2017 (12 month fishing year)

Approach to setting Specifications	Status Quo (IFQ at 5.5% of ACL) Section 2.3.1			Applying Spatial Management to Spec Setting (IFQ at 5.5% of PL) Section 2.3.2		
	Basic Run and ETC Flex Options					
Description	Status Quo From FY2016 (FW27)	No Action	Alt 2 (Basic Run-30 DAS) & Alt 7 (ETC-30 DAS)	Alt 3 (Basic Run-30 DAS) & Alt6 (ETC-30 DAS)	Alt 4(Basic Run-F=0.4) & ETC	Alt 5 (NLS ext.)
Total landings (mill. lbs.)	47.7	35.6	52.4	49.2	47.3	46.5
IFQ Quota (lbs.)	4,473,180	4,473,180	5,538,005	2,579,317	2,471,159	2,557,711
IFQ permits only (lbs.)	4,066,527	4,066,527	5,034,550	2,344,834	2,246,508	2,325,192
LA+IFQ permits	406,653	406,653	503,455	234,483	224,651	232,519

The potential economic impacts of the alternatives are analyzed in Table 12 for the vessels with IFQ permits only in comparison to SQ scenario levels. Benefits for the vessels for the LA vessels with IFQ permits would be similar for the part of fishing under the LAGC IFQ rules with 600 lb. possession limit. Although SQ and No Action scenarios allocate the same level of pounds to the IFQ fishery, under the status quo option prices would be lower than the No Action alternative. Total number of trips were estimated by dividing total landings by 600 lb. (possession limit) and DAS per trip was assumed to average 1.15 days per trip, which was the average days-at-sea per trip for vessels with more than 75% dependence on scallop revenue during 2010-15 fishing years. Trip costs per DAS were assumed to equal to \$430, again equivalent to the average trip costs for 2010-2015 for the same group of vessels.

If the IFQ quota was set at 5.0% of ACL (excluding the LA vessels with IFQ permits) total revenue of the IFQ vessels would increase by about 22.6% under ALT2 (Basic Run at 30 DAS) and ALT7 (ETC Flex at 30 DAS), but would decline by 40% to 45% if the quota was set at 5% of total landings even though prices would be higher with the latter option. Net revenues (gross revenue minus trip costs) would decline in almost the same proportions because the reduction in revenues outweigh any savings in trip costs under the spatial management options.

Table 12. Projected economic impacts on IFQ fishery (excluding LA vessels with IFQ permits, revenues, prices and costs are in 2016 dollars)

Approach to setting Specifications	Status Quo (IFQ at 5.0% of ACL) Section 2.3.1			Applying Spatial Management to Spec Setting (IFQ at 5.0% of PL) Section 2.3.2		
	Basic Run and ETC Flex Options					
Description	SQ Status Quo From FY2016 (FW27)	No Action	ALT2 (Basic Run-30 DAS) & ALT7 (ETC- 30 DAS)	Alt 3 (Basic Run-30 DAS) & Alt6 (ETC-30 DAS)	Alt 4(Basic Run-F=0.4) & ETC	Alt 5 (NLS Ext.)
Landings (mill.lb)	4.1	4.1	5.0	2.3	2.2	2.3
Difference from SQ	-	-	1.0	(1.7)	(1.8)	(1.7)
% difference from SQ	0.0%	0.0%	23.8%	-42.3%	-44.8%	-42.8%
Projected Price	11.9	12.7	11.8	12.0	12.1	11.9
Revenue (\$ mill.)	48.4	51.5	59.3	28.1	27.2	27.6
Difference from SQ	0.0	3.1	10.9	-20.3	-21.2	-20.8
% difference from SQ	0.0%	6.3%	22.6%	-41.9%	-43.8%	-43.0%
Number of trips	6,778	6,778	8,391	3,908	3,744	3,875
Estimated DA	7,831	7,831	9,695	4,516	4,326	4,478
Trip costs (\$ mill.)	3.4	3.4	4.2	1.9	1.9	1.9
Net revenue (\$ mill.)	45.0	48.1	55.1	26.2	25.3	25.7
Difference from SQ	0.0	3.1	10.1	-18.9	-19.7	-19.4
% difference from SQ	0.0%	6.8%	22.5%	-41.9%	-43.7%	-43.0%

The analysis provided in Table 12 assumes that IFQ vessels will harvest all of their quota. During the 2010-2015 fishing year, quota utilization varied from 82% to 91% of total allocations including carryover from the previous year with a declining trend in the recent years (Table 13). Underutilization of quota could happen due to several factors including poor resource conditions in the areas IFQ vessels generally fish, or due to high leasing or quota prices, high fishing costs or lower ex-vessel prices than expected in a fishing year. Some owners may also prefer to save a portion of their IFQ for future years if better yield is expected from the scallop resource. Therefore, it is not certain if all the allocated pounds could be harvested, and if for example, 5 million pounds that would be allocated to the IFQ fishery in 2017 under ALT2 and ALT7 (with 5.0% of ACL specification option) would be landed in the same fishing year. In other words, assuming that all quota would be harvested could overestimate the losses that could be actually incurred as overall IFQ allocations are reduced by spatial management options.

On the other hand, there is no question that allocating 5.0% of the projected landings (instead of 5% of the ACL) to the IFQ fishery will result in lower landings and revenues compared to what was experienced in the recent years by the IFQ vessels. Even under ALT4 with open area $F=0.48$, total quota for the IFQ fishery (excluding the LA vessels with IFQ permits) would be about 2.4 million lb., that is, less than total scallop landings of these vessels in 2016 fishing year so far (end of September), as well would be less than what they harvested in 2011 and 2012 fishing years (Table 13). Given that in 2016 fishing year so far landings exceeded 2015 levels by 37% compared to September 2015, it is possible for 2016 landings to exceed 3.2 million lb. by the end of February (if the 2016 landings would be 37% more than 2015 landings of 2.3 million lb., Table 14). With this assumption, spatial management specification alternatives could reduce revenues of these vessels by 24% to 26% compared to 2016 levels and compared to status quo management. For vessels that have carry-over allocations from the previous years, these impacts could be less if they were carry-over pounds were used in 2017 or in the future years. Also, over the long-term, spatial management alternatives could have some positive impacts on the scallop biomass and yield compared to SQ management benefiting both the LA and LAGC-IFQ fisheries. Allocating 5.5% of the access area allocations to the IFQ fishery under this option would benefit these vessels if those areas have higher abundance of especially large scallops which sell at a price premium.

The economic impacts of allocating 5% of the projected landings to IFQ fishery (excluding 0.5% allocated to LA-IFQ vessels) would not be uniform across the IFQ vessels, however. In the last five years, over 70 active vessels in the IFQ fishery derived more than 75% of their revenue from scallops (Table 15). Therefore, these vessels would likely to be impacted relatively more compared to the rest of the fleet from reduction of IFQ allocations. An additional economic impact of lower quota would be a potential increase in lease prices per pound of quota as active vessels seek to obtain additional pounds to keep their landings and incomes at the levels for previous years, leading to lower revenues net of leasing costs. If lease prices increase in the same proportion to the decline in IFQs, there may be no change in the earnings of those who lease out quota to active vessels, otherwise their income from leasing may decline as well. Scallop prices, fuel and other fishing costs, abundance of scallop resource in areas IFQ vessels usually fish would determine how much lease prices can go up without making leasing uneconomical for the active vessels. For the same reasons, IFQ selling price per pound of quota may increase, but the value of the total quota held by individual owners or affiliations may decline if the increase in price is not large enough to offset the decline in overall pounds.

Table 13. Projected economic impacts on IFQ fishery (excluding LA vessels with IFQ permits, revenues, prices and costs are in 2016 dollars)

Fishyear	Scallop landings	Allocations (Base+Adjustment)	Carryover	Landings as a % allocations	Landings as a % of allocations plus carryover
2010	2,221,588	2,329,500	-	95%	95%
2011	2,768,097	2,912,270	131,881	95%	91%
2012	2,864,049	3,096,960	194,049	92%	87%
2013	2,302,551	2,228,630	301,354	103%	91%
2014	2,130,012	2,204,140	209,897	97%	88%
2015	2,412,220	2,701,970	243,041	89%	82%
2016*	2,727,234	4,068,760	356,536	67%	62%

*includes landings from March 1 to end of September only.

Table 14. Cumulative landings by month in 2015 and 2016 fishing years

Month	2016		2015		% increase from 2015
	Cumulative landings	% of Sub-ACL	Cumulative landings	% of Sub-ACL	
March	89,801	2.2%	124,122	4.6%	-28%
April	415,110	10.2%	289,792	10.7%	43%
May	1,017,511	25.0%	757,105	28.0%	34%
June	1,605,847	39.5%	1,214,863	45.0%	32%
July	2,017,913	49.6%	1,723,039	63.8%	17%
August	2,442,746	60.1%	1,891,462	70.0%	29%
September	2,727,234	67.0%	1,989,691	73.7%	37%
October			2,048,751	75.9%	
November			2,115,223	78.3%	
December			2,198,117	81.4%	
January			2,266,583	83.9%	
February			2,324,577	86.1%	

Table 15. IFQ vessels and revenue per vessel (nominal values)

Fish Year	% Revenue	Number of active IFQ vessels	Total revenue per vessel	Scallop revenue per vessel	Average % revenue from scallops	Revenue from other species per vessel
2010	>=75%	66	216,123	206,687	96%	9,436
	0.1 to 75%	86	338,024	82,086	24%	255,938
2011	>=75%	71	316,271	306,942	97%	9,329
	0.1 to 75%	69	476,484	147,277	31%	329,207
2012	>=75%	72	324,768	313,099	96%	11,669
	0.1 to 75%	54	508,004	165,106	33%	342,898
2013	>=75%	70	325,126	318,963	98%	6,163
	0.1 to 75%	49	420,858	139,318	33%	281,540
2014	>=75%	73	276,971	271,426	98%	5,545
	0.1 to 75%	58	430,278	156,681	36%	273,597
2015	>=75%	72	330,219	322,367	98%	7,852
	0.1 to 75%	56	437,543	153,306	35%	284,237

1.1.5.1.1 Number of LAGC IFQ Access Area Trips

1.1.5.2 Allocation of LAGC IFQ trips in access areas

The LAGC IFQ fishery is allocated a fleetwide total number of access area trips. Individual vessels are not required to take trips in specific areas like access area trips allocated to the limited access fishery. Instead, maximum number of trips is identified for each area and once that limit is reached, the area closes to all LAGC IFQ vessels for the remainder of the fishing year. In addition to No Action, there are different allocations options to determine the overall number of trips, and three area alternatives to determine the number of trips per area.

1.1.5.2.1 LAGC AA Allocation Option 1 – No Action (851 trips – Default measures)

Under No Action (Option 1) LAGC IFQ vessels would be allocated 851 trips in MAAA access areas starting on April 1. This is equivalent to default number of trips from FW27 and consists of a small fraction of what IFQ fishery would be allocated under other options for the access areas. Under No Action only 11% of the LAGC IFQ catch could come from access areas, with the rest coming from open areas Table 16. However, the cost of fishing could be higher in the open compared to fishing in access areas which are expected to have a higher stock abundance. Usually larger scallops have a price premium compared to smaller ones and if larger scallops are more abundant in access areas, not being able to fish in those areas could affect the revenues negatively as well. Thus, this option could have negative economic impacts on the LAGC IFQ vessels compared to other options.

1.1.5.2.2 LAGC AA Allocation Option 2 – Same AA proportion of catch

Under Alternative 2 the number of trips would be based on the total proportion of catch from AA compared to open areas. The number of trips would vary depending whether IFQ fishery is allocated 5.5% of the ACL (status quo management) or 5.5% of the projected landings (spatial management). With the status quo management, access area allocations would equal to about 51% of the total catch and with spatial management, it would equal to 49% of the total catch. As a result, the number of trips allocated to the LAGC fishery will approximately equal to 2125 (4723) trips, which roughly equates to 1.27 (2.83) million lb. or about 51.6% (63.4%) of the IFQ catch under the spatial management (status quo management) (Table 16). Therefore, Alternative 2 would allow the LAGC IFQ effort to be distributed over more areas providing opportunity to vessels to fish in more productive areas to reduce their fishing costs by catching the possession limit in a shorter time-period as well as to optimize the size composition of their landings by selectively fishing in areas abundant with larger scallops. Since larger scallops in general command a higher price, this option could also have positive impacts on revenues. The number of trips and scallops pounds allocated to access areas for the LAGC fishery is higher than Alternative 1 but slightly lower compared to Alternative 3. Therefore Alternative 2 is expected to have positive economic impacts compared to No Action, but slightly lower economic benefits compared to Alternative 3.

Table 16. Number of access area trip allocations for LAGC IFQ fishery

Approach to setting Specifications	Status Quo (IFQ at 5.5% of ACL) Section 2.3.1			Applying Spatial Management to Spec Setting (IFQ at 5.5% of PL) Section 2.3.2		
				Basic Run and ETC Flex Options		
Description	Alternative 1 (No Action-default measures)	Alternative 2 (Same proportion as LA, access area catch 51%)	Alternative 3 (5.5% of access area allocations)	Alternative 1 (No Action-default measures)	Alternative 2 (Same proportion as LA, access area catch 49%)	Alternative 3 (5.5% of projected catch)
Number of trips	851	4723	2459	851	2125	2230
Catch allocated to access areas (lb.)	510,600	2,833,800	1,475,400	510,600	1,275,000	1,338,000
IFQ Quota (lb.)	4,473,180	4,473,180	5,538,005	2,579,317	2,471,159	2,557,711
% of IFQ catch allocated for access areas	11.4%	63.4%	26.6%	19.8%	51.6%	52.3%

1.1.5.2.3 LAGC AA Allocation Option 3 – Same overall allocation of 5.5%

This alternative would allocate 5.5% of the access area TAC per area to the LAGC fishery in the form of fleetwide trips. An allocation of 5.5% of that amount is equivalent to about 1.34 million lb., or 2,230 trips with a 600 pound possession limit under spatial management option (5.5% of projected landings) and it would equal to 1.47 lb. or 2459 trips with the status quo management (5.5% of ACL). Therefore, Alternative 3 would provide more flexibility for IFQ vessels to

optimize their profits by having access to areas with higher scallop abundance while the No Action alternative would limit fishing mostly to the open areas (Table 16).

With spatial management, Alternative 3 would also allocate slightly more pounds to access (1.34 lb.) compared to Alternative 2 (1.27 lb.), increasing the flexibility for IFQ vessels to fish in areas with higher scallop abundance. As a result, Alternative 3 would help to reduce fishing-times in catching possession limit and to lower trips costs. It would also provide opportunity for IFQ vessels to optimize the size composition of their landings. Since larger scallops in general command a higher price, this Alternative would also have positive impacts on revenues and profits compared to both No Action and Alternative 2 with spatial management (Table 16).

However, if overall IFQ allocations were based on 5.5% of the ACL, Alternative 3 would allocate almost half the number of trips or pounds for the access areas (2459 trips and 1.47 lb.) compared to Alternative 2 (4723 trips or 2.83 lb.). Therefore, Alternative 3 would have lower economic benefits compared to Alternative 2 if status quo management option (5.5% of ACL) is selected in determining total allocations for the IFQ fishery (Table 16).

1.1.5.3 LAGC IFQ Allocations by Access Area

Number of trips and pounds under each of the following alternatives would be different for spatial (5.5% of projected landings) versus status quo management (5.5% of ACL) and according to each specification alternative (Table 11, Table 12 and Table 13 of the Framework document).

1.1.5.3.1 Alternative 1 – Equal Distribution to all open Access Areas

This option would allocate LAGC IFQ AA trips to all open AAs including to CA2. This option could increase the fishing costs and reduce profits for LAGC vessels by allocating a significant proportion (about 1/4th) of access area trips to CA2 for IFQ vessels many of which do not have the capacity to fish offshore areas of Georges Bank.

1.1.5.3.2 Alternative 2 – Equal split by AA, prorate CA2 to evenly to other Access Areas

This alternative would allocate LAGC IFQ AA trips equally to all open access areas, and prorate LAGC CA II AA trip allocation evenly across all other open access areas (NLS, MAAA, and potentially the ETC). Alternative 2 provides more flexibility to IFQ vessels homeported in Massachusetts and in other ports in Mid-Atlantic located within close proximity to access areas. This could have positive economic benefits for LAGC vessels by reducing the trip time and costs of fishing. However, this option would allocate less trips to NLS area compared to the access areas in Mid-Atlantic compared to Alternative 3.

1.1.5.3.3 Alternative 3 – Equal split by AA, prorate CA2 trips 50% to NLS and 50% to MAAA/ETC

This option would allocated LAGC IFQ AA trips equally to all open access areas, and prorate LAGC IFQ CAII AA trip allocations by 50% to the NLS AA, and 50% to the MAAA/ETC AA. Similar to Alternative 2, this option would provide more flexibility to IFQ vessels homeported in Massachusetts and in other ports in Mid-Atlantic located within close proximity to access areas. By equally distributing the CA2 trips between NLS and MAAA/ETC areas, this alternative

would provide more trips to NLS access area (although still less number of trips than allocated to MAAA) compared to Alternative 2. Therefore, this could benefit those IFQ vessels homeported in Massachusetts slightly more compared to Alternative 2.

1.1.6 Proration of allocations to account for 13 month FY in FY2017

Amendment 19 to the Scallop FMP modifies the start of the scallop fishing year from March 1 to April 1, beginning in FY2018. This change means that the 2017 fishing year will be a month longer (13 months). Alternatives in this section (**Error! Reference source not found.**) consider whether or not to prorate DAS and LAGC IFQ allocations to account for a longer fishing year. The following options would only apply for FY2017, as the fishery will operate on a 12-month fishing year starting on April 1, 2018.

1.1.6.1 Alternative 1 – No Action (Based Allocations on 12 month FY)

Under No Action, there would be no change to the allocation for FY2017. The DAS and LAGC IFQ allocations specified through FW28 would be based on a twelve month fishing year, consistent with past approaches. There would be no change to the allocations specified by the Council in Section 2.3, which are based on a twelve month fishing year. This alternative will have negative economic impacts for scallop fishery in the 2017 fishing year since landings and economic benefits would be lower than what could normally be under a 13 month period.

1.1.6.2 Alternative 2 – Prorate allocations for a 13 month FY by 13/12ths

The 2017 fishing year will be 13 months from March 1, 2017 to March 31, 2018. This alternative would prorate the twelve month DAS and LAGC IFQ specifications in Section 2.3 to account for the longer fishing year. Under Alternative 2 open area DAS for LA vessels and IFQ quota share would increase by roughly 8%. As a result, scallop landing, revenues and total economic benefits for the scallop will be higher compared to the levels for No Action. This action would also be allocating more DAS than what was used in March in the last 3 years from 2013 to 2015. Therefore, economic benefits for this alternative would also exceed the benefits for Alternative 3 under which DAS and IFQ allocations would increase by 4.7%. The long-term impacts of this alternative on scallop yield could be marginally negative if the additional effort reduces scallop exploitable biomass in the future years.

1.1.6.3 Alternative 3 – Prorate 2017 allocation based on March fishing activity

Option 2 would prorate the 2017 DAS and LAGC IFQ allocations based on recent DAS usage and LAGC IFQ landings from FY2013 – FY 2015 during the month of March. Both LA and LAGC IFQ components utilized around 4.7% of their DAS and IFQ allocations during March. Therefore, this alternative would increase the DAS and corresponding IFQ allocations by 4.7% with positive economic benefits for the scallop fishery. Although, under Alternative 3, landings and revenues for the 2017 fishing year would be slightly lower compared to levels for Alternative 2, long-term scallop yield and economic benefits of this alternative could be slightly larger than that of for Alternative 3.

1.1.7 Additional measures to reduce Fishery Impacts

1.1.7.1 Alternative 1 – No Action (Default – RSA compensation fishing restricted to open areas)

RSA compensation fishing would be restricted to open areas only. Vessels with RSA poundage would not be allowed to harvest RSA compensation from access areas. No Action alternative would protect small scallops in the access areas and how positive economic impacts over the long-term by increasing scallop yield. However, this measure would unnecessarily restrict RSA research if it is possible to fish in some access areas such as MAAA and stay away from pockets with small scallops.

1.1.7.2 Alternative 2 – RSA in any area open to the scallop fishery

RSA compensation fishing would be permitted from any area open to the scallop fishery, including open areas and any access areas opened in this action. This alternative could have negative long-term economic impacts on the scallop fishery if RSA fishing in areas with small scallops lowers long-term scallop yield.

1.1.7.3 Alternative 3 – RSA compensations fishing only in MAAA and open areas (excluding NGOM Management Area)

RSA compensation fishing would be permitted only in the Mid-Atlantic Access Area and in open areas, excluding the NGOM Management Area. This provision is expected to reduce impacts of RSA fishing on small scallops in the NGOM, reduce mortality in the NLS access area and to reduce impacts on high densities of small scallops in the ETA. As a result, this measure would have positive impacts on the scallop biomass in these areas increasing yield and economic benefits from the scallop fishery.

Prohibition of RSA trips in the CA II access area is expected to reduce impacts on Georges Bank yellowtail flounder bycatch in the area and would help prevent the scallop fishery exceeding its GB yellowtail allocation. Therefore this measure would have positive economic impacts for the scallop fishery by reducing the likelihood of more stringent measures to reduce yellowtail bycatch by the scallop fishery.

1.1.8 Possession of Shell Stock inshore of Days At Sea Monitoring line

1.1.8.1 Alternative 1 – No Action

There would be no change to existing restrictions on the possession of shell stock inshore of the day-at-sea demarcation line. A vessel with a limited access or general category scallop permit that fishes or transits any are south of 42°20' N latitude during any portion of a trip, it will be prohibited from possessing more than 50 US bushels when inshore of the day-at-sea monitoring line and from landing more than 50 US bushels from a fishing trip. This measure is intended to allow a limited fishery to continue north of 42°20' N. latitude by some vessels that have traditionally landed in-shell scallops. However, No Action could have some negative impacts on the scallop resource if vessels deckload sea scallops and shuck them inside of the day-at-sea monitoring line and consequently could have negative economic benefits by reducing scallop yield over the long-term.

1.1.8.2 Alternative 2 – Restrict the Possession of Shell Stock Inshore of DAS Demarcation Line

This measure would restrict the number of bushels that limited access or general category vessels can possess to 50 when inshore of the day-at-sea monitoring line, effectively expanding an existing provision that only applied to fishing activity south of 42°20' N latitude. It would help prevent scallop vessels from possessing excessive amounts of shell stock inshore of the day-at-sea monitoring line, eliminating the incentive to deckload and shuck scallops “off the clock”. The 50 US bushel limit will enable the vessels to bring a moderate amount of shell stock in to avoid poor weather and/or to land some shell stock for a small market for whole scallops or scallop parts. As a result, this measure is expected to have positive impacts on the sea scallop biomass, yield and total economic benefits