Part IV: Peer Review Report

by

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Center for Independent Experts

CIE Independent Review of the Technical Report on Recommendations for Excessive-Share Limits in the Surfclam and Ocean Quahog Fisheries

By

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July 4, 2011

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Executive Summary

Background and Objective

Since 1990, surfclam and ocean quahog (SCOQ) fisheries are each managed through setting a total allowable catch and individual transferable quotas. Over the last 20 years, and in the last five in particular, this sector has experienced:

- significant increases in market concentration in both processing and harvesting, resulting in fewer firms either buying or selling SCOQ products; and
- a significant increase in vertical coordination between processors and harvesters.

These trends have raised concerns about market power impacts and also raised awareness of how an excessive-share limit might be implemented in this and any other fishery facing increasing concentration.

At the request of the Center for Independent Experts, the objective of this report is to independently evaluate a report by the Technical Group of Experts (Mitchell, Peterson, and Willig, 2011) containing recommendations for excessive-share limits in the SCOQ and other U.S. fisheries.

Major Findings

Methodology Used by the Technical Group

The primary tool used by the Technical Group for determining the maximum possible allowable percentage share of quota ownership that will prevent market power is the 2010 *Horizontal Merger Guidelines* by the U.S. Department of Justice and the Federal Trade Commission, particularly the sections pertaining to market concentration. The steps may be summarized as:

- Determine the ownership and control of quotas in the fishery
- Determine the relevant market, particularly in reference to competition from outside the fishery, such as state fisheries and imports.
- Compute market shares based on the previous steps
- Compute the Herfindhal-Hirshmann index based on a hypothetical maximum share cap and ensure that the share cap does not lead to an HHI that exceeds 2500, which is the

threshold determined by the *Horizontal Merger Guidelines* for an industry to be deemed "highly concentrated."

A corollary tool is to ensure that there are three efficient processors in the fishery.

Strengths and Weaknesses of the Technical Group Report

The following are deemed strengths of the report:

- Use of the most universal guidelines for assessing competition: the *Horizontal Merger Guidelines*, particularly a threshold HHI of 2500, which is the gold standard.
- Inclusion of outside competitors that determine the relevant output market, particularly imports and state fisheries as well as fringe firms in the fisheries, which are bound to behave competitively regardless of the excessive share cap.

The following are deemed issues that require further attention:

- Focusing exclusively on monopoly power at the expense of a focus on monopsony power, which is likely to be the prevailing case in fisheries.
- Lack of explicit consideration of harvesting and processing efficiency, which may give room to improve performance of the fishery, particularly if market power effects are weak. Cost reductions may reduce or even reverse a firm's incentive to elevate price in the monopoly case.

Crucial information to implement the approach requires careful definition of quota ownership and control and of the relevant market.

Applicability to the SCOQ and Other Fisheries

The approach used by the Technical Group is generic and is applicable to just about any fisheries, provided accurate information is obtained on quota rights and control, boundaries of the relevant market, and efficiency effects of the scale of operation. For the case of the SCOQ fisheries, given current conditions, it is recommended to set a fixed excessive-share cap of 30-40%, or a more flexible two-part cap of 30% long term, 40-60% short term.

Although a 30-40% cap may be restrictive if the market is defined too narrowly or if efficiency effects of concentration are ignored, it is likely to be appropriate if there are buying power or

monopsony concerns since, for the latter, the relevant market is geographically confined to the fishery in question.

Besides the monopsony and efficiency concerns pointed out, the main room for improvement is collecting accurate information about the fishery, the market, and performance indicators such as quota prices.

Public policy to restrain excessive market concentration via excessive-share caps or by other means is commonplace in non-fish U.S. markets and has been the focus of antitrust and competition policy for many years. When evaluating excessive-share caps, the ultimate issue is not only whether adverse competitive effects have resulted from ongoing concentration, but whether such effects are likely to arise in the future and if excessive-share caps can deter such trends without harming market performance and competitiveness.

Background

Federal fisheries are commonly managed under annual catch limits and some type of limited access programs to address both economic and environmental sustainability. Since 1990, surfclam and ocean quahog (SCOQ) fisheries are each managed through setting a total allowable catch (TAC) and individual transferable quotas (ITQs).

Over the last 20 years, there have been two significant changes in market structure leading to concerns over competition, or lack thereof, with regard to the current ITQ system:

- a significant increase in market concentration of firms at both the harvesting and processing stages resulting in fewer firms either buying or selling SCOQ products; and
- a significant increase in vertical coordination between processors and harvesters, specifically the use of contracts and, in the clam subsector in particular, processor control of ITQs.

Given these changes, a central concern is the potential market power effects from market concentration of SCOQ quota ownership and control. One instrument available to regulators, and the focus of this report, is to set an excessive catch share, i.e., the maximum catch share allowable to a harvester or to an entity such as a processor who may also control part of the harvest in order to mitigate or prevent market power.

The golden rule of market concentration regulation is provided by the Department of Justice and the Federal Trade Commission's *Horizontal Merger Guidelines* (HMG).[1] Accordingly, the threshold for an industry to be deemed "highly concentrated" is determined by an excessive share of the quota calculated by the Herfindahl-Hirschman Index (HHI), which measures the size distribution of firms by summing their squared market shares (thus ranging from 0 to 10,000), with H=2,500 being a cause of concern, as based on past experience by U.S. antitrust authorities.

By this standard, the HHI of surfclam and ocean quahog processing purchases have already surpassed this threshold, raising concern about the exercise of market power, particularly if the current trend in processing concentration continues, which is likely to be the case if left unchecked.

[1] U.S. Department of Justice and the Federal Trade Commisssion. *Horizontal Merger Guidelines.* Washington, D.C., August 19, 2010. Available at: http://www.justice.gov/atr/public/guidelines/hmg-2010.html

With regard to pending Amendment 15 to the SCOQ Fishery Management Plan, administered by the Mid-Atlantic Fishery Management Council (MAFMC), the goal is to define an "excessive share" threshold for the ITQ to prevent limited access holders from acquiring an excessive share of the TAC privileges, in compliance with the Magnuson-Stevens Act. The issue of market power effects of excessive shares is an overriding concern. At the request of the MAFMC and the National Marine Fisheries Service (NMFS), a group of technical experts (Mitchell, Peterson and Willig, 2011, Appendix A) provided recommendations for excessive-share limits for SCOQ fisheries.

Reviewer's Role in the Review Process

At the request of the Center for Independent Experts (CIE), I was asked to provide an impartial and independent peer review, without conflicts of interest, of a report by the Technical Group of Experts (Mitchell, Peterson, and Willig, 2011, Appendix A) containing recommendations for excessive-share limits in the SCOQ fisheries. The Statement of Work (tasks and deliverables), the Terms of Reference and the agenda for the CIE panel review are in Appendix B. This report follows the content requirement as specified in Annex 1 of Appendix B. The period of review spanned from May 17 through July 21, 2011, and included an open, in-person meeting on June 21-23, 2011 at Falmouth/Woods Hole, Massachusetts, and a pre-meeting review of the background documents received as well as the post-meeting writing of this report.

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[2] Lopez, R.A., A. Azzam, and C. Lirón-España. "Market Power and/or Efficiency: A Structural Approach." *Rev. Ind. Org.* 20(2002): 115-126. Bhuyan, S. and R.A. Lopez. "Oligopoly Power in the Food and Tobacco Industries." *Amer. J. Agric. Econ.* 79(1997): 1035-1043. Bonanno, A. and R.A. Lopez. "Competition Effects of Supermarket Services." *Amer. J. Agric. Econ.* 91(2009): 555-568. Lopez,R.A. and E. Lopez. "The Impact of Imports on Price Cost Margins: An Empirical Illustration." *Emp. Econ.* 28(2003): 403-416. Lopez, R.A. and Z. You. "Determinants of Oligopsony Power: The Haitian Coffee Case." *J. Dev. Econ.* 35(1993): 465-473.

Summary of Findings for Terms of Reference

Terms of Reference 1: *Describe the method or process used by the NMFS Technical Group for determining the maximum possible allowable percentage share of quota ownership that will prevent an entity from obtaining market power.*

An excessive-share cap limits the amount of quota of any harvesting quota holder. The primary method used by the NMFS Technical Group is to set the excessive-share cap so that the HHI does not exceed 2500, based on the Federal Trade Commission's 2010 *Horizontal Merger Guidelines*, in order to ensure that there are at least three efficient processors, based on a common (Kwoka, 1979), albeit not universal, principle that a third firm imposes a crucial pro-competitive effect, as reflected by price-cost margins.[3] As with any excessive-share cap, the process requires information on ITQ ownership and control, economies of scale, substitutability of products, and definition of relevant markets or size of the market in order to compute the correct market shares.

To determine *a priori* whether or not an excessive share cap is necessary, the Technical Report compares TAC relative to the monopoly equilibrium. If TAC is below the monopoly output, TAC would be binding and force the market to operate at an output more constraining than one being controlled by a single monopolist. In this case, an excessive-share cap is not necessary because there would be no incentive to withhold quota (meaning withholding harvesting through not using all the ITQs) in order to raise price. An interesting point is that, at the margin, a unit of an ITQ is worth the difference between the demand price and the marginal cost of harvesting. Thus, the "price" of the quota is positive if there is monopoly power or if there is competitive behavior; but TAC is binding, creating a wedge between price and marginal cost. If there is perfectly competitive behavior and TAC is non-binding (there is unused, surplus quota in the market), then the price of the quota is zero. Thus, the price of the quota conveys relevant information as to the pre-existing competitive conditions in a fishery.

In terms of the relevant market, the technical group focuses on two elements and how they affect market shares and, therefore, the determination of an excessive-share cap:

- the share of non-SCOQ fisheries (state fisheries and imports) as their increasing presence defines a larger market, provided they are significant substitutes for the fishery product and geography in question, and

[3] Kwoka, J.E. Jr. "The Effect of Market Share Distribution on Industry Performance." *Rev. Econ. Stat.* 61(1979): 101-109. In the business literature, there is a widely accepted notion that a Rule of Three structure is optimal because three big and efficient companies (e.g., with more than 10% market share) act as a tripod to ensure that neither destructive competition nor collusion prevails (see Sheth, J.N. and S. Sisodia. *The Rule of Three: Surviving and Thriving in Competitive Markets.* New York: Free Press, 2002).

- the share of fringe firms as their increasing presence reduces the market subject to excessive-share caps and, by nature of behaving competitively, exerts a disciplining effect.

The Technical Group's determination of market shares is as follows. First, participants are classified into (1) regular quota holders or controllers who can be affected by the excessive-share caps (e.g., TAC shares of more than 10%) and (2) fringe firms holding small market shares or serving niche markets. Let TAC_i denote the quota allocated to the i^{th} quota holder, where *TAC* is simply the sum over *all* ITQs as set by the fishery authority. Let *M* denote the size of the market which is composed of TAC (effective or binding) plus "outside" (*O*) fisheries to account for imports and state fisheries that may be substitutes for SCOQ fisheries. Thus, $M=TAC+O$ denotes the size of the market. Thus, a relevant or "effective" market share is defined as TAC_i/M. By squaring these market shares and adding up one obtains the 'relevant' HHI. The sum of the squared shares of the fringe firms is excluded from the summation for computational convenience, as small shares' squares have little impact on the HHI. However, their aggregate share limits the portion of TAC subject to the excessive-share cap.

The Technical Group relies on four alternative scenarios corresponding to different levels of non-SCOQ fisheries (0, 10, 20 and 40% of TAC), where 0% denotes the case where there are no substitutes from outside fisheries. The Technical Report then presents a table for each scenario with computed HHIs resulting from combinations of alternative levels of excessive-share caps (20-70%) and aggregate shares of fringe firms (0-30%) in the SCOQ fisheries. As the market expands beyond the product and/or geographic boundaries of the SCOQ fisheries, or as the aggregate share of fringe firms increases, the excessive-share cap corresponding to an HHI of 2500 increases.

For example, scenario 1 assumes a market with zero non-SCOQ fisheries. In this case, a 20% excessive-share cap (i.e., 20% of TAC) with no fringe firms results in an HHI of 2000. Scenario 2 assumes a market with non-SCOQ fisheries equivalent to 10% of TAC. The same share cap of 20% of TAC as in scenario 1 would now result in an effective HHI of 1653 as the market is defined more broadly. In other words, in scenario 2, a 20% share cap corresponds to an 18.182% market share since the market is 10% larger (M=1.10 TAC, and 18.182%=20%/1.10), thus reducing the HHI.

Generation of effective HHIs over four scenarios depicting shares of fringe firms of up to 30% of TAC and state fisheries and imports with volumes of up to 40% of TAC lead to a range of acceptable combinations of excessive-share caps to ensure an effective HHI of 2500 and three non-fringe firms operating in the market. In other words, any level of excessive-share cap with combinations of non-SCOQ fisheries and aggregate shares of fringe firms resulting in HHIs over

2500 are deemed undesirable as they would result in a highly-concentrated market by the *Horizontal Merger Guidelines.*

The above scenarios lead the Technical Group to recommend setting the excessive-share caps at either (a) a fixed cap at 30-40%, or (b) a two-part cap at 30% for the long-term and a 40-60% for the short term (which could lead to an HHI over 2500 in the short term).

Terms of Reference 2: *Evaluate the strengths and weaknesses of the proposed method developed by the NMFS Technical Group for determining maximum possible allowable percentage share of quota ownership. Review and comment on the data requirements necessary for applying the proposed methods.*

Among the strengths of the Technical Group's proposed method for fisheries in general are:

- *Merger Guidelines:* Uses 2010 DOJ-FTC *Horizontal Merger Guidelines*, particularly a threshold Herfindahl-Hirshmann Index of 2500, which is the gold standard for analyzing competition in the United States and abroad. Thus, it brings the problem into a class of more generalizable situations for which ready comparison can be made across fisheries and non-fishery cases.
- *Inclusion of non-SCOQ Fisheries:* Considers the effect of a competitive fringe as well as the effects of state fisheries and imports in determining the relevant market and, therefore, the relevant market shares which are bounded from below by the TAC shares. The larger the relevant market or degree of demand substitution from outside the fisheries area, the greater the allowable excessive-share cap.
- *Efficiency Consideration:* Recognizes, although not explicitly incorporating, the importance of potential processing and harvesting efficiency effects from increased concentration. Requiring three 'efficient' processors under the suggested HHI will encourage economies of size as well as ensuring a minimum degree of competition in the geographic region of the fisheries, regardless of the size of the relevant market for processed fishery products.

Among the weaknesses of the methodology are:

- *Monopsony Power:* Focusing on monopoly power sidesteps the possibility of monopsony or buying power, which seems to be more relevant in many fisheries. Harvesters and processors tend to face an elastic demand for their products as wholesale output markets are often much larger than the fisheries. The relevant market for monopsony power is bound to be more geographically localized than the output market. Thus, a fishery is more likely to face monopsony power than it does monopoly power.

- *Efficiency Effects:* Underlying many of the analyses regarding industrial concentration, and the HHI in particular, is an overriding concern with market power, particularly if it results in significant increases in the price of output through restriction of the use of ITQs, but recent literature and even the *Horizontal Merger Guidelines* consider the possibilities of factoring in efficiencies that result from mergers or increases in concentration.[4] This issue is not addressed although, in a unilateral context, cost reductions resulting from concentration or expansion that may be limited by a cap may reduce or even reverse a firm's incentive to elevate price. [5]
- *Numerator of Market Shares:* Quota control and ownership are disjoined from volume processed in the definition of market shares. Normally, the Herfindahl Index is defined based on market shares in the output or input market based on transactions (revenues or expenditures on the input in question). The current definition of an excessive-share cap separates ownership and control and can yield a situation where a single processor processes 2/3 of the harvest but only officially controls 1/3 without owning any. In the standard literature a 2/3 purchase of the total volume would be of concern.
- *Denominator of Market Shares:* The relevant product and geographic markets are not defined, although market shares are computed as the ratio of the quota or cap shares divided by the size of the 'relevant' market. In other words, the denominator of the share expression becomes crucial information as the allowable excessive-share cap increases with the size of the relevant market.

Implementation of the method proposed by the Technical Group requires at least the following data:

- *Quota ownership and control*: Clear records of the number of independent entities that own the quota and who controls it through long term contracts or through vertical arrangements (e.g., quota owners who also own shares of processing firms). This is crucial to compute the numerator of market shares used in the HHI.
- *Processing volumes and capacity*: It is standard also to base HHI on actual market transactions (revenues or expenses). Processing capacity also indicates the possibility of fast entry that may threaten anti-competitive behavior.
- *Size of the Relevant Market*: Data on substitutability of products at the level of demand facing the fisheries (primary processing), through customer surveys or through evidence

[4] Azzam, A. M. "Measuring Market Power and Cost-Efficiency Effects of Industrial Concentration." *J. Ind. Econ.* 45 (1997): 377-386. Focarelli, D. and F. Panetta. "Are Mergers Beneficial to Consumers? Evidence from the Market for Bank Deposits." *Amer. Econ. Rev.* 93 (2003): 1152-1172. Bian, L. and D.G. McFetridge. "The Efficiencies Defense in Merger Cases: Implications of Alternative Standards." *Can. J. Econ.* 33 (2000):297-318.

[5] DOJ-FTC, *Horizontal Merger Guidelines,* p. 29.

from econometric studies on cross-price elasticities and sensitivity of demand to imports and the volume produced at other fisheries of species relevant to the market in question, is also necessary.

Other necessary data on market structure, conditions of entry, behavior of market participants, and economies of size are mentioned in the report but are not essential in the determination of the excessive-share methodology proposed. Rather, they are supportive evidence for the methodology proposed.

Terms of Reference 3: *Evaluate application of the proposed methods to the Surfclam/Ocean Quahog ITQ fishery. If there is disagreement with what the NMFS Technical Group recommended, clearly state that and your reason why.*

The economic entities in the SCOQ fisheries are clearly three groups: harvesters, primary processors, and quota owners who can be harvesters, processors, corporations, or other economic agents. Demand facing processors seems to be fairly price elastic, reflecting the fact that upstream buyers can obtain substitutes for SCOQ fisheries, at least in the long run, and substitution from other clam species to other forms of ingredients. In addition, there seems to be a large degree of backward integration of processing into harvesting which would to a certain degree obviate the potential monopsony power issue.

An important aspect for the applicability of the proposed method to the SCOQ fishery is that currently fringe firms can be safely assumed to hold approximately 10% of the fishery and that net imports (imports less exports) that compete domestically are in the vicinity of 20-25%. Thus, the scenarios presented by the Technical Group apply to the case of SCOQ fisheries provided that non-SCOQ fisheries directly compete with SCOQ fisheries in the relevant market.[6]

Given the foregoing, the Technical Group recommends a fixed excessive-share cap of 30-40 % or, alternatively, a flexible cap of 30% long term and 40-60% short term. The key number emerging in the report is a 40% excessive-share cap, which automatically ensures independent harvest supply to sustain at least three processors in the market.

First, there is no constitutional basis to interpret “excessive” solely based on market power, or in this case, monopoly power. If efficiency effects are strong (e.g., strong economies of scale) and processors face a much larger market than the SCOQ fisheries, then efficiency considerations may be more significant than faltering market power. As concentration affects harvesting and particularly processing costs, costs may be bound to be affected more than wholesale price paid to processors. In other words, profit margins of processors, as determined

[6] In 2008, the SCOQ fisheries supplied approximately 83 million pounds, imports from Canada and other countries additionally supplied approximately 33 million pounds, and exports accounted for 13 million pounds, according to personal communication with Dr. Jose Montanez, Fishery Management Specialist at MAFMC.

by price received minus cost, might be importantly determined more by cost than by their influence on the price they receive. Ultimately, given a potential trade-off between price set and production cost from the excessive-share cap in SCOQ, what matters more from an antitrust perspective is the level of the price set which will also depend on the passthrough of any potential cost savings. It might be the case that consolidation is necessary for survival, in which case a higher excessive-share cap might be recommended.

What might be more useful for incorporating efficiencies is the relationship between output price and the HHI induced by the excessive-share cap, where the market power test might be a 5% increase in output price (or a 5% reduction in the price paid to harvesters) rather than relying solely on an effective HHI of 2500. As the *Horizontal Merger Guidelines* suggest, market shares may not fully reflect the competitive significance of firms in the market and should be used in conjunction with other evidence of competitive effects.[7]

In conclusion, I reckon that an excessive-share cap for the SCOQ fisheries of 30-40% or the two-part cap counterpart might be rather conservative estimates and that it might not be surprising that, considering efficiency impacts, an excessive-share cap of 2/3 of TAC or eventually a natural monopoly or monopsony might be preferable.

Terms of Reference 4: *Evaluate whether the approach outlined by the NMFS Technical group is reasonable for setting excessive share limits in fisheries managed through catch shares? As part of this TOR, comment on any constraints that may hinder application of the methods proposed by the NMFS Technical Group.*

The approach used by the Technical Group is generic and is applicable to just about any fisheries, provided accurate information is obtained on quota rights and control, boundaries of the relevant markets, and efficiency effects of scale of operation. The first two are essential to compute the correct market shares from which to compute the HHI and impute the appropriate excessive-share cap to induce a relevant HHI of 2500 in a fishery.

The main constraints remain access to the accurate information needed to appropriately implement the approach. Some of this information may be considered proprietary and it may not be in the best interest of dominant producers, for instance, to reveal all necessary information. As in any market, full and accurate information is needed for markets to work smoothly. Asymmetric information will generate advantages to those who have access to it and will make the regulator's job more imprecise and difficult. It may also lead to suboptimal policies from the perspective of a social planner.

[7] DOJ-FTC, *Op cit.*

Terms of Reference 5: *Provide any recommendations for further improvement.*

The report relies on the legal foundation of protecting against market power under any conceivable market condition and also relies on a "blunt" instrument, i.e. an excessive- share cap. This is accomplished by tying share caps to market shares, and hence, to market structure, which is bound to affect market conduct and performance. However, the same market structure can lead to a variety of performance outcomes, i.e., price levels, price-cost margins, cost efficiency, and social welfare.

Further recommendations fall into two areas: (1) consideration of monopsony power, particularly if monopoly power seems weak; and (2) consideration of efficiency effects of excessive-share caps that may correspond to high HHI levels, possibly beyond 2500.

In considering the lack of focus on monopsony power case, and in view of the intended application of the methodology, consider a fishery-processing industry consisting of *N* firms converting raw fish into fish products for the wholesale market. For simplicity, assume fixed proportions between the fish input and the output and that each firm sells output in a competitive market and buys non-fish inputs also in a competitive market. Let q_i denote the raw fish bought by the i^{th} processor and let the total amount bought by all processors be given by $Q = \sum q_i (i = 1,\ldots,N)$. A processor's profit maximization problem is given by $Max \Pi_i = [P_w - c - P] q_i$, where P_w is the wholesale price of the processed fish product, c is the per unit processing cost, and P is the price paid to fish harvesters. To maximize profits, the processors set a price for fish so that their net value of marginal product, $NVMP = P_w - c$, equals their marginal input cost, $MIC = P(1 + \theta_i / \eta)$, where $\theta_i = S_i(1 + \lambda_i)$ is a measure of perceived coordination across processors, market share is $S_i = q_i / Q$; the reaction of other firms is given by $\lambda_i = \sum \partial q_j / \partial Q$; and $\eta = -(\partial Q / \partial P)(P/Q)$ is the price elasticity of harvesters' supply. At equilibrium, given our assumptions, $\theta_i = \theta$ since all processors are assumed to face the same $NVMP$ and pay P to the harvesters. One point here is that not only market shares collectively determine the price paid to harvesters but also processing efficiency and the degree of coordination among processors.[8]

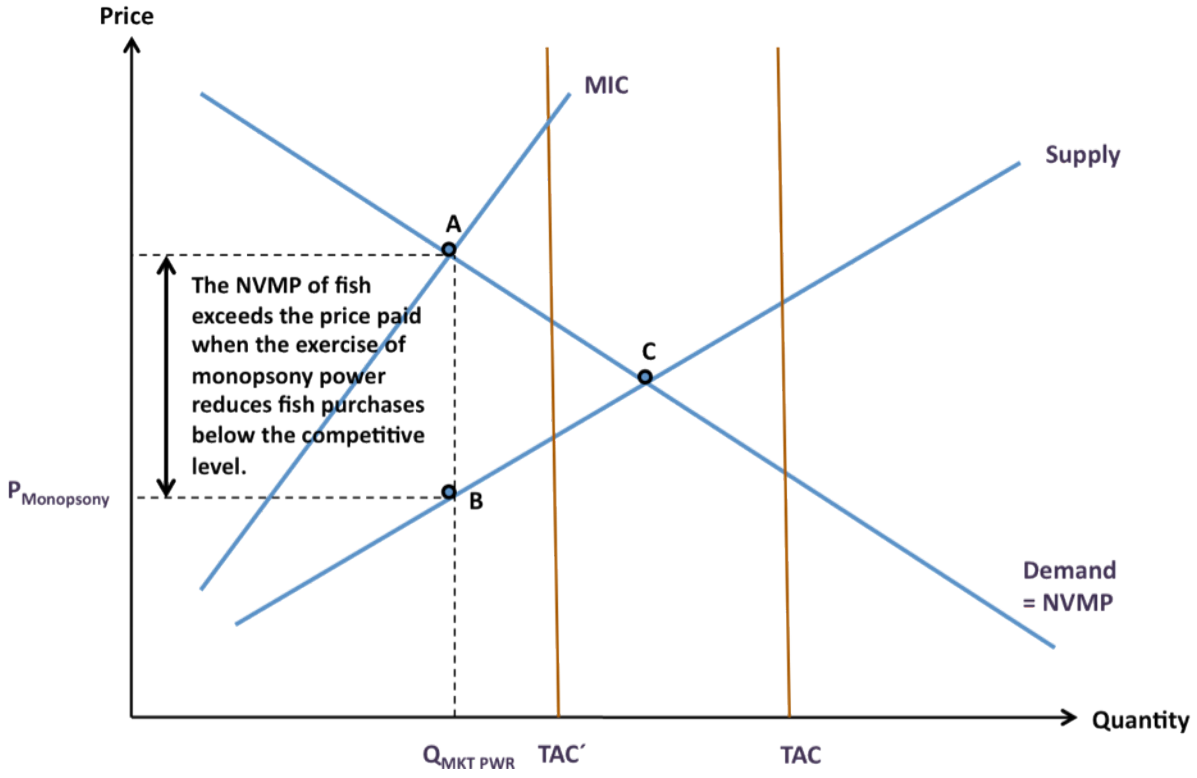
The Technical Report relates the price of the quota as *prima facie* evidence of market power. It argues that a competitive market equilibrium with a non-binding TAC results essentially in a zero quota price as the competitive market, not TAC, determines market equilibrium and therefore the price of fish equals the marginal cost of harvesting. Alternatively, a monopoly equilibrium or a competitive market with a binding TAC (below market equilibrium) results in a positive quota price because the price of fish exceeds the cost of harvesting. Currently and in the last few years, TAC has not been binding as there has been surplus quota and the price of the quota has been neglible. An alternative explanation is given to those in the report.

[8] For similar models, see Azzam (1997) and Lopez and You (1993), *Op. Cit.*

Figure 1 illustrates the case of monopsony equilibrium instead of a competitive equilibrium (point C) where there is a non-binding TAC (*TAC* or a more constraining *TAC'*). If, as stated before, the 'free' market equilibrium is not a competitive equilibrium but a monopsonistic one where buyers have market power over harvesters or independent quota holders, then it is possible that a non-binding quota is partially the result of constraining the *use* of quotas rather than withholding quota from the supply side; however, the surplus quota may in this case have a neglible price, not necessarily a positive price as stated in the case presented in the report. This equilibrium occurs, as shown above, where the net value of marginal product equals the marginal input cost at point A in Figure 1, resulting in a non-competitive margin that accrues to processors, depressing the price of fish to the harvester and resulting in a zero quota price at the margin. In the case that quota holders exercise *monopoly* power, as in the report (e.g., Figure 5), then equilibrium occurs at point B but the quota would have a *positive* price reflected by the difference between the higher price at point A and the harvesting cost at point B, also constraining volume below the competitive level. Thus, the price of the quota depends on the type of market power considered, structure of quota rights and vertical integration. In the case of a monopsony, where quota owners also own processing facilities, transactions will give priority to those vertically integrated or who will enter into a vertical agreement with a non-compete clause. This would be disadvantageous to independent quota owners who would be likely to be the ones left out with a zero quota price if TAC is non-binding.

Figure 1

Monopsony Equilibrium in an ITQ-Regulated Fishery with Non-Binding TAC



Given the foregoing, the following is recommended:

- Focus more on the potential monopsony power effects rather than just monopoly power, explicitly considering alternative vertical coordination arrangements.

Contrary to traditional thinking, which only considered market power effects from increased market concentration, concentration can also lead to significant efficiency gains through redistribution of output toward more efficient (e.g., lower cost) firms, resulting in a potential trade-off between market power and efficiency.

In considering the lack of focus on efficiency effects, consider that The *Horizontal Merger Guidelines*, in addition to prescribing an HHI of 2500, also provide a performance outcome: the resulting increase (decrease in a monopsonistic situation) in price should be less than 5% relative to a benchmark such as the competitive outcome. A suggestion for further improvement is to focus more broadly on the balance of market power and efficiency. The problem with market power is price. If all one wants to avoid is market power, there is a danger of overlooking efficiency effects that may be crucial for the survival of the industry, particularly when demand is depressed due to economic or competitive conditions brought about from outside the fishery area. Why should two fisheries, one with strong economies of scale and one without, have the same HHI prescription?

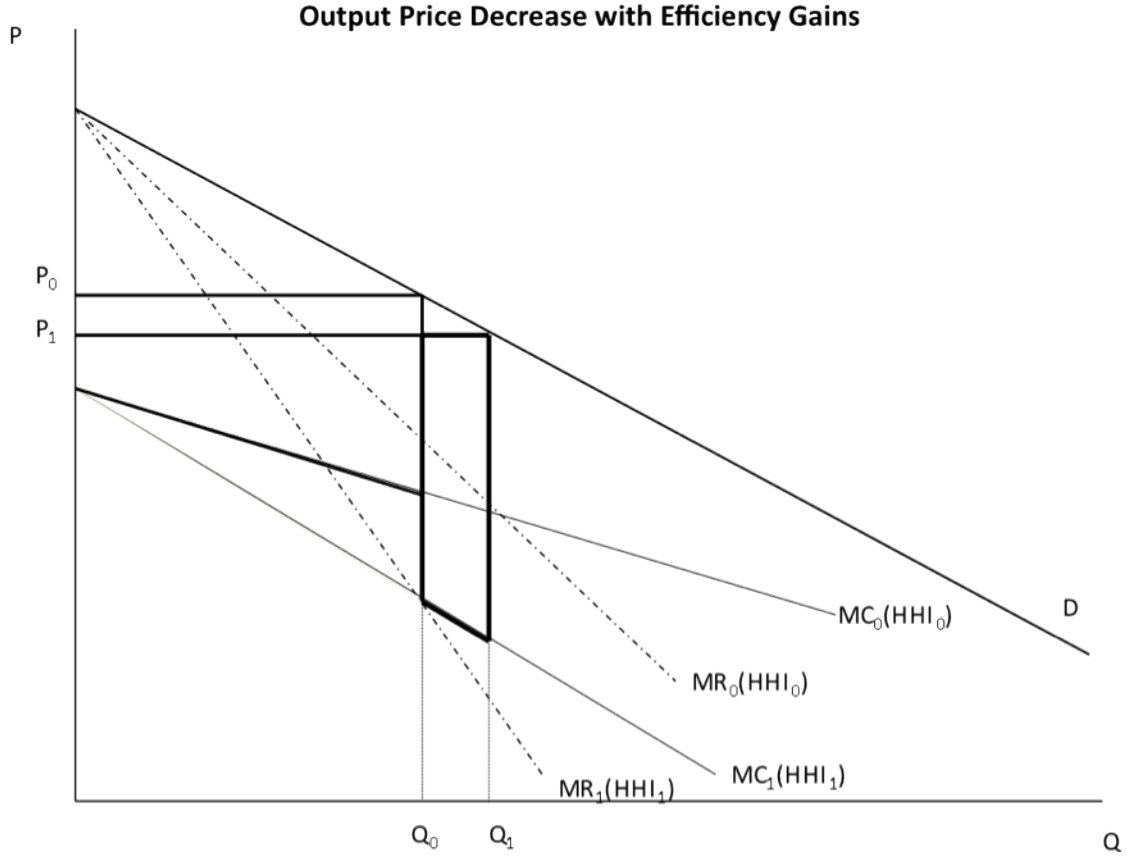
Given the foregoing, the following is recommended:

- Focus more on potential price effects rather than just HHI, explicitly considering harvesting and processing efficiency effects.

To illustrate, Figure 2 shows an industry equilibrium in which market power increases and industry marginal cost decreases with an increase in HHI (from HHI_0 *to* HHI_1). Market equilibrium occurs when marginal revenue *MR* equals marginal cost *MC* at a given level of *HHI.* [9] At industry equilibrium, the increase in concentration causes an increase in market power that is more than offset by an increase in efficiency by redistributing output to the most efficient firms, thus resulting in a lower output price *P* and an expansion of output from Q_0 to Q_1, which would be beneficial to consumers. The point is that the report seems to imply that at the moment market power is either non-existent or very limited (near-zero price for the quota). If that is the case then, efficiency considerations might be given greater weight as long as they can be substantiated.

[9] See Lopez, R.A. and C. Lirón-España. "Social Welfare and the Oligopoly-Efficiency Tradeoff in U.S. Food Processing: A Note." *J. Agric. Food Ind. Org.* 1(2003): Article 5 (10 pages). Available from http://www.bepress.com/jafio/vol1/iss1/art5.

Figure 2
Output Price Decrease with Efficiency Gains



Another improvement, mentioned in the report, is collecting information on the shadow price of the quota, either through creating an auction mechanism to reveal prices or by soliciting this information explicitly from quota holders.

To conclude, public policy to restrain excessive market concentration via excessive-share caps or by other means is commonplace in non-fish U.S. markets and has been the focus of antitrust and competition policy for many years particularly focused on market concentration. When evaluating excessive-share caps, the ultimate issue is not only whether adverse competitive effects have resulted from ongoing concentration, but whether such effects are likely to arise in the future and if excessive-share caps can deter such trends without harming market performance and competitiveness.

Appendix 1: Bibliography of Materials Provided

Mitchell, Glenn, Steven Peterson, and Robert Willig. *Recommendations for Excessive-Share Limits in the Surclam and Ocean Quahog Fisheries.* Compass Lexecon, May 3, 2011.

Mid-Atlantic Fishery Management Council in cooperation with National Marine Fisheries Service. *Overview of the Surfclam and Ocean Quahog Fisheries and Quota Considerations for 2011, 2012, and 2013.* Dover, Delaware, April 2010.

Appendix 2: Statement of Work for Dr. Rigoberto Lopez

External Independent Peer Review by the Center for Independent Experts

Evaluation of excessive shares study in the

Mid-Atlantic surfclam and ocean quahog ITQ fishery

Scope of Work and CIE Process: The National Marine Fisheries Service's (NMFS) Office of Science and Technology coordinates and manages a contract providing external expertise through the Center for Independent Experts (CIE) to conduct independent peer reviews of NMFS scientific projects. The Statement of Work (SoW) described herein was established by the NMFS Project Contact and Contracting Officer's Technical Representative (COTR), and reviewed by CIE for compliance with their policy for providing independent expertise that can provide impartial and independent peer review without conflicts of interest. CIE reviewers are selected by the CIE Steering Committee and CIE Coordination Team to conduct the independent peer review of NMFS science in compliance the predetermined Terms of Reference (ToRs) of the peer review. Each CIE reviewer is contracted to deliver an independent peer review report to be approved by the CIE Steering Committee and the report is to be formatted with content requirements as specified in **Annex 1**. This SoW describes the work tasks and deliverables of the CIE reviewer for conducting an independent peer review of the following NMFS project. Further information on the CIE process can be obtained from www.ciereviews.org.

Project Description: Recently, the Mid-Atlantic Fishery Management Council has been crafting Amendment 15 to the Surfclam and Ocean Quahog Fishery Management Plan, and as part of the Amendment, has been attempting to define an "excessive share" threshold for the Individual Transferable Quota (ITQ) portion of the fishery. Regarding share accumulation, section 303A(c)(5)(D) of the 2006 reauthorized Magnuson-Stevens Act states that ITQ privilege programs should ensure that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program. In addition, National Standard 4 of the Magnuson Act (16 *U.S.C*. 1851(a)(4)) requires that fishing privilege allocations be carried out so that "no particular individual, corporation, or other entity acquires an excessive share of such privileges." During the course of the Council's deliberations on the market power excessive share issue, it was decided that additional expertise was needed to examine the economic rationale behind the excessive share determination, and to recommend an excessive share level, if needed. In order to provide this expertise, a Technical Group of Experts (not the CIE) is being assembled to give advice on the appropriate excessive share threshold for the surfclam and ocean quahog ITQ system. This Technical Group will assess available models for evaluating the presence of market power, and make recommendations with regard to their appropriateness for setting excessive catch share limits.

The work being performed by this Technical Group could be controversial. It will establish methods for determining excessive shares which might be applied in other fisheries (besides surfclams and ocean quahogs). With the movement by NMFS to catch share systems, determining what constitutes an excessive share and whether limits need to be put in place is extremely important because excessive

share may lead to market power. Market power can lead to the ability to influence price in either the final product market or for factors of production (i.e. the fish resource). Examination of market share has never been formally investigated in this fishery. Thus the study by the Technical Group will be innovative and significant.

After the Technical Group has delivered its recommendations, a peer review (by the CIE) needs to take place to either endorse or reject the findings from the Technical Group. This two-step process was agreed to by the Northeast Fisheries Science Center (NEFSC) and the Mid-Atlantic Fishery Management Council (MAFMC).

The Terms of Reference (ToRs) of the peer review are attached in **Annex 2**. The tentative agenda of the panel review meeting is attached in **Annex 3**.

Requirements for CIE Reviewers: Three CIE reviewers shall conduct an impartial and independent peer review in accordance with the SoW and ToRs herein. CIE reviewers shall have working knowledge and recent experience in the application of economics, with specific expertise in industrial organization. The reviewers should have theoretical and empirical expertise in the economics of market structure/conduct/performance, particularly monopoly/oligopsony, antitrust, firm strategy, and government regulation. Experience conducting studies using econometric models and/or index-based assessments of market concentration and market power would be useful. Experience with markets operating under government permits such as production permit or marketing orders in agriculture, bandwidth for TV and radio, and tradable permit systems like ITQ's in fisheries would be desirable. Empirical studies of market structure in renewable resource industries would be desirable as would an understanding of the statutory context for antitrust regulation. Each CIE reviewer's duties shall not exceed a maximum of 14 days to complete all work tasks of the peer review described herein.

Not covered by the CIE, the CIE chair's duties should not exceed a maximum of 14 days (i.e., several days prior to the meeting for document review; the CIE panel meeting in Woods Hole; several days following the open meeting for SARC Summary Report preparation).

Location of Peer Review: Each CIE reviewer shall conduct an independent peer review during the panel review meeting scheduled in Woods Hole, Massachusetts during 21-23 June 2011.

Statement of Tasks: Each CIE reviewer shall complete the following tasks in accordance with the SoW and Schedule of Milestones and Deliverables herein.

1. Prior to the Peer Review Meeting:

Upon completion of the CIE reviewer selection by the CIE Steering Committee, the CIE shall provide the CIE reviewer information (full name, title, affiliation, country, address, email, FAX) to the COTR, who forwards this information to the NMFS Project Contact no later the date specified in the Schedule of Milestones and Deliverables. The CIE is responsible for providing the SoW and ToRs to the CIE reviewers. The NMFS Project Contact is responsible for providing the CIE reviewers with the background documents, reports, foreign national security clearance, and other information concerning pertinent

meeting arrangements. The NMFS Project Contact is also responsible for providing the Chair (see below) a copy of the SoW, background documents and final report in advance of the panel review meeting. Any changes to the SoW or ToRs must be made through the COTR prior to the commencement of the peer review.

Foreign National Security Clearance: When CIE reviewers participate during a panel review meeting at a government facility, the NMFS Project Contact is responsible for obtaining the Foreign National Security Clearance approval for CIE reviewers who are non-US citizens. For this reason, the CIE reviewers shall provide requested information (e.g., first and last name, contact information, gender, birth date, passport number, country of passport, travel dates, country of citizenship, country of current residence, home country, and FAX number) to the NMFS Project Contact for the purpose of their security clearance, and this information shall be submitted at least 30 days before the peer review in accordance with the NOAA Deemed Export Technology Control Program NAO 207-12 regulations available at the Deemed Exports NAO website: http://deemedexports.noaa.gov/sponsor.html).

Pre-review Background Documents: Approximately two weeks before the peer review, the NMFS Project Contact will send (by electronic mail or make available at an FTP site) to the CIE reviewers the necessary background information and reports for the peer review. In the case where the documents need to be mailed, the NMFS Project Contact will consult with the CIE Lead Coordinator on where to send documents. CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the SoW scheduled deadlines specified herein. The CIE reviewers shall read all documents in preparation for the peer review.

2. During the Open Meeting

Panel Review Meeting: Each CIE reviewer shall conduct the independent peer review in accordance with the SoW and ToRs, and shall not serve in any other role unless specified herein. **Modifications to the SoW and ToRs can not be made during the peer review, and any SoW or ToRs modifications prior to the peer review shall be approved by the COTR and CIE Lead Coordinator.** Each CIE reviewer shall actively participate in a professional and respectful manner as a member of the meeting review panel, and their peer review tasks shall be focused on the ToRs as specified herein. The NMFS Project Contact is responsible for any facility arrangements (e.g., conference room for panel review meetings or teleconference arrangements). The NMFS Project Contact is responsible for ensuring that the Chair understands the contractual role of the CIE reviewers as specified herein. The CIE Lead Coordinator can contact the Project Contact to confirm any peer review arrangements, including the meeting facility arrangements.

(Review Meeting Chair)

A member of the Mid-Atlantic Management Council Scientific and Statistical Committee will serve as Chairperson. The role of the Chair is to facilitate the meeting, which includes coordination of presentations and discussions, and making sure all Terms of Reference are reviewed. Additionally, the Chair shall prepare the summary report from the meeting. During the meeting the Chair can ask

questions or make statements to clarify discussions, and he can move the discussion along to ensure that the CIE reviewers address all of the TORs.

(CIE Reviewers)

Each CIE reviewer shall participate as a peer reviewer in a panel discussion centered on a report furnished to NMFS by the Technical Group of Experts regarding excessive shares in the surfclam and ocean quahog fishery. Reviewers are to determine whether the findings of the Technical Group are valid given the Terms of Reference provided to the expert panel. If reviewers consider the recommendations of the expert panel to be inappropriate, the reviewers should recommend an alternative.

During the question and answer period, a representative of the NMFS expert panel will be available to answer questions about the report. The CIE members can provide feedback to the expert panel member at that time.

(Other Panel Members)

A representative from the Mid-Atlantic Fishery Management Council staff, and the Northeast Fisheries Science Center Social Sciences Branch will be available during the meeting to provide any additional information requested by the CIE reviewers. Other panel members may assist the Chair prepare the summary report, if requested.

3. After the Open Meeting

Contract Deliverables - Independent CIE Peer Review Reports: Each CIE reviewer shall complete an independent peer review report in accordance with the SoW. Each CIE reviewer shall complete the independent peer review according to required format and content as described in Annex 1. Each CIE reviewer shall complete the independent peer review addressing each ToR as described in Annex 2.

Other Tasks – Contribution to Summary Report: The Chair from the SSC and CIE reviewers will prepare the Peer Review Summary Report. Each CIE reviewer will discuss whether they hold similar views on each Term of Reference and whether their opinions can be summarized into a single conclusion for all or only for some of the Terms of Reference. For terms where a similar view can be reached, the Summary Report will contain a summary of such opinions. In cases where multiple and/or differing views exist on a given Term of Reference, the Report will note that there is no agreement and will specify - in a summary manner – what the different opinions are and the reason(s) for the difference in opinions.

The Chair's objective during this Summary Report development process will be to identify or facilitate the finding of an agreement rather than forcing the panel to reach an agreement. The Chair will take the lead in editing and completing this report. The Report (please see Annex 1 for information on contents) should address whether each Term of Reference was completed successfully. For each Term of Reference, this report should state why that Term of Reference was or was not completed successfully.

Specific Tasks for CIE Reviewers: The following chronological list of tasks shall be completed by each CIE reviewer in a timely manner as specified in the **Schedule of Milestones and Deliverables**.

1) Conduct necessary pre-review preparations, including the review of background material and reports provided by the NMFS Project Contact in advance of the peer review.
2) Participate during the panel review meeting at the Northeast Fisheries Science Center, Woods Hole, MA laboratory during 21-23 June, 2011 as specified herein, and conduct an independent peer review in accordance with the ToRs (**Annex 2**).
3) No later than 7 July, 2011, each CIE reviewer shall submit an independent peer review report addressed to the "Center for Independent Experts", and the report should be sent to Mr. Manoj Shivlani, CIE Lead Coordinator, via email to shivlanim@bellsouth.net, and Dr. David Sampson, CIE Regional Coordinator, via email to david.sampson@oregonstate.edu. Each CIE report shall be written using the format and content requirements specified in Annex 1, and address each ToR in **Annex 2**.

Schedule of Milestones and Deliverables: CIE shall complete the tasks and deliverables described in this SoW in accordance with the following schedule.

17 May 2011	CIE sends reviewer contact information to the COTR, who then sends this to the NMFS Project Contact
7 June 2011	NMFS Project Contact sends the CIE Reviewers the pre-review documents
21-23 June 2011	Each reviewer participates and conducts an independent peer review during the panel review meeting
7 July 2011	CIE reviewers submit draft CIE independent peer review reports to the CIE Lead Coordinator and CIE Regional Coordinator
14 July 2001	Draft of Summary Report, reviewed by all CIE reviewers, due to panel Chair *
21 July 2001	Panel Chair send final Summary Report, approved by CIE reviewers, to NEFSC contact
21 July 2011	CIE submits CIE reports to the COTR
28 July 2011	The COTR distributes the final CIE reports to the NMFS Project Contact and regional Center Director

*The Summary report will not be submitted, reviewed, or approved by the CIE

Modifications to the Statement of Work: Requests to modify this SoW must be approved by the Contracting Officer at least 15 working days prior to making any permanent substitutions. The Contracting Officer will notify the COTR within 10 working days after receipt of all required information of the decision on substitutions. The COTR can approve changes to the milestone dates, list of pre-review documents, and ToRs within the SoW as long as the role and ability of the CIE reviewers to

complete the deliverable in accordance with the SoW is not adversely impacted. The SoW and ToRs shall not be changed once the peer review has begun.

Acceptance of Deliverables: Upon review and acceptance of the CIE independent peer review reports by the CIE Lead Coordinator, Regional Coordinator, and Steering Committee, these reports shall be sent to the COTR for final approval as contract deliverables based on compliance with the SoW and ToRs. As specified in the Schedule of Milestones and Deliverables, the CIE shall send via e-mail the contract deliverables (CIE independent peer review reports) to the COTR (William Michaels, via William.Michaels@noaa.gov).

Applicable Performance Standards: The contract is successfully completed when the COTR provides final approval of the contract deliverables. The acceptance of the contract deliverables shall be based on three performance standards:

(1) each CIE report shall completed with the format and content in accordance with **Annex 1**,

(2) each CIE report shall address each ToR as specified in **Annex 2**,

(3) the CIE reports shall be delivered in a timely manner as specified in the schedule of milestones and deliverables.

Distribution of Approved Deliverables: Upon acceptance by the COTR, the CIE Lead Coordinator shall send via e-mail the final CIE reports in *.PDF format to the COTR. The COTR will distribute the CIE reports to the NMFS Project Contact and Center Director.

Support Personnel:

William Michaels, Program Manager, COTR)
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Key Personnel:

NMFS Project Contact:
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John.Walden@noaa.gov
Phone: 508-495-2355

Annex 1: Format and Contents of CIE Independent Peer Review Report

1. The CIE independent report shall be prefaced with an Executive Summary providing a concise summary of the findings and recommendations in accordance with the ToRs.

2. The main body of the reviewer report shall consist of a Background, Description of the Individual Reviewer's Role in the Review Activities, Summary of Findings for each ToR in which the weaknesses and strengths are described, and Conclusions and Recommendations in accordance with the ToRs.

   a. Reviewers should describe in their own words the review activities completed during the panel review meeting, including providing a brief summary of findings, of the science, conclusions, and recommendations.

   b. Reviewers should discuss their independent views on each ToR even if these were consistent with those of other panelists, and especially where there were divergent views.

   c. Reviewers should elaborate on any points raised in the Summary Report that they feel might require further clarification.

   d. Reviewers shall provide a critique of the NMFS review process, including suggestions for improvements of both process and products.

   e. The CIE independent report shall be a stand-alone document for others to understand the weaknesses and strengths of the science reviewed, regardless of whether or not they read the summary report. The CIE independent report shall be an independent peer review of each ToRs, and shall not simply repeat the contents of the summary report.

3. The reviewer report shall include the following appendices:

   Appendix 1: Bibliography of materials provided for review

   Appendix 2: A copy of the CIE Statement of Work

   Appendix 3: Panel Membership or other pertinent information from the panel review meeting.

Annex 2: Terms of Reference for the Peer Review

Evaluation of excessive shares study in the

Mid-Atlantic surfclam and ocean quahog ITQ fishery

The peer review shall be conducted based on the following Terms of Reference (ToRs):

1. Describe the method or process used by the NMFS Technical Group for determining the maximum possible allowable percentage share of quota ownership that will prevent an entity from obtaining market power.

2. Evaluate the strengths and weaknesses of the proposed method developed by the NMFS Technical group for determining maximum possible allowable percentage share of quota ownership. Review and comment on the data requirements necessary for applying the proposed methods.

3. Evaluate application of the proposed methods to the Surfclam/Ocean Quahog ITQ fishery. If there is disagreement with what the NMFS Technical Group recommended, clearly state that and your reason why.

4. Evaluate whether the approach outlined by the NMFS Technical group is reasonable for setting excessive share limits in fisheries managed through catch shares? As part of this TOR, comment on any constraints that may hinder application of the methods proposed by the NMFS Technical group.

5. Provide any recommendations for further improvement

Appendix 2-Annex 3: Tentative Agenda

Evaluation of excessive shares study in the

Mid-Atlantic surfclam and ocean quahog ITQ fishery

Falmouth and Woods Hole, Massachusetts during 21-23 June 2011

Tuesday, June 21. Holiday Inn, Lighthouse Room, Jones Road, Falmouth, MA

9:00-9:15 AM

Opening

Welcome

Introduction SSC Chair

Agenda

Conduct of Meeting

9:15 – 9:30 Background and Need for Expert Panel Report – Lee Anderson

9:30-11 Report of the NMFS Expert Panel - NMFS Expert Panel Rep.

11-11:15 Break

11:15 -Noon Review Terms of Reference – CIE Panel

Noon – 1:15 Lunch

1:15 – 3:00 CIE Panel Discussion – Terms of Reference #1.

3:00-3:15 Break

3:15-4:00 Public Comments

4:00-4:45 CIE Panel Discussion – Terms of Reference #2

4:45-5:00 Questions for following day

Wednesday, June 22. Holiday Inn, Lighthouse Room, Jones Road, Falmouth, MA

9:00-9:30 Review any outstanding questions from previous day

9:30-10:30 CIE Panel Discussion – Terms of Reference #3

10:30-10:45 Break

10:45-Noon CIE Panel Discussion – Terms of Reference #4

Noon-1:30 Lunch

1:30 – 3:00 CIE Panel Discussion – Terms of Reference #5

3:00-3:15 Break

3:15-5:00 CIE Panel Discussion – Outstanding Issues

Thursday June 23 Location: Clark Conference Room, Northeast Fisheries Science Center.

9:00 – 5:00 Report writing (Meeting Closed to Public)

Appendix 3: Panel Membership

Panel Chair:

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