

## RSA WORKSHOP #2: FUNDING

### 1. INTRODUCTION

The primary objective of the Research Set Aside (RSA) program is to generate resources to fund research projects that align with the priorities of the Mid-Atlantic Fishery Management Council so that the findings can be incorporated into the Council's management programs. Under this program the grant recipients are awarded set aside quota rather than money. That RSA quota must then be monetized to pay for the research. The RSA quota value is mainly driven by the financial incentives of industry participants to pay for additional fishing opportunities. Aside from this main objective, there are important secondary and competing objectives that must be met to ensure the success and continuity of the program:

- i. Maximize revenues from RSA quota
- ii. Ensure fairness in access to RSA quota
- iii. Foster collaboration between scientific and fishing communities
- iv. Ensure compliance with the reporting and use of the RSA quota

#### Maximize revenues from RSA quota

The Council's goal under the Magnuson Act's National Standard 1 is to provide the greatest overall benefits to the Nation from the living marine resources under its legal stewardship. In some cases, its management goals and objectives are compromised by uncertainty in the science and subsequent application of policy. RSA research is one way to fill knowledge gaps with the intent to improve management outcomes.

The starting reference point for a well-designed RSA program is to maximize revenues received in the conversion of quota pounds into dollars, thereby conducting the greatest amount of research possible. Attributes of a well-designed program will utilize mechanisms that encourage fishermen to pay the fair-market values for the quota poundage (e.g., no insider or special deals). This is oftentimes achievable through open competitive markets.

Having appropriate data to manage a fishery is one of the underlying findings of Section 2 the Magnuson Act:

"(8) The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States."

Thus, it is imperative that the Council adopts a data collection program that will allow the computation of revenues and willingness to pay for RSA quota. This is the basis for the Council's

investment in RSA research, and from which it will measure the return on that investment over time, gauging whether the value of the quota set aside for research produced meaningful results for management of the stocks and the fishermen who seek them. Also, any deviation from the maximum revenue objective to pursue other goals can then be objectively evaluated by conducting a trade-off analysis of what is proposed to be gained for what is proposed to be given up.

#### Ensure fairness in access to RSA quota

In re-establishing an RSA program, the Council may find its design unintentionally impacts access to the program by different segments or sectors of a fishery. Not all sectors may be economically able to compete on equal terms to obtain RSA quota. Moreover, the Council could also choose to use access to the RSA program as a deliberate policy choice. For example, it could design its RSA program to give preference to a particular gear, sector, or geographic area, such as allowing discounted/subsidized RSA quota shares to black sea bass pot fishermen economically affected by wholesale gear replacement regulations because of entanglement rules.

Magnuson Act National Standards 4 and 5 are relevant here, as the allocation or assignment of shares shall be fair and equitable and shall consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose. NOAA legal counsel will need to provide advice on what is the legal versus policy constraint of "equitable" versus "equal" treatment of different sectors in access to RSA quota.

What is known is that any trade-off in the maximum competitive RSA value, intentional or not, will result in a diminution in the total revenue. It is important for the Council to collect data to evaluate whether what they achieve in return for that diminution is worth it.

#### Foster collaboration between scientific and fishing communities

The objectives of the Council's original RSA program were not aligned with economic performance, efficiency, or revenue outcomes. Rather, the RSA program was originally established to regain public trust. The Environmental Assessment for the original RSA program states:

*"Commercial fishermen seek to maximize the revenue from their harvests and will operate their vessels and deploy their gear in such a way as to best accomplish this end. Scientists, conversely, are bound by the "scientific method," and seek to gain information and verify its accuracy through rigorous experimental procedures. Management programs based on this information may then be questioned by the public and lack credibility in their eyes. The Mid-Atlantic Council has developed the research set-aside program to address these concerns. Without the active cooperation of the fishing public, most management programs are destined to fail, as it is chiefly*

*through the actions of commercial and recreational user groups that humans interact with and affect fisheries resources."*

The Council was not trying to maximize the amount of research for a given dollar; its objective was to engage fishermen directly in the conduct of research because many had no faith in the science being conducted by NOAA or the states, and this lack of confidence was creating management and enforcement issues. In reviewing the past RSA program, the key element of collaboration was communication; it appeared to be the cause of most success stories (a lot of) and almost all failures (a lack thereof).

Thus, identifying fisheries and/or research priorities based on greatest economic value may run counter to other social, cultural and/or geo-political criteria. From a public policy viewpoint, these other criteria offer valid perspectives. There are also varying degrees of research collaboration possible, starting with NOAA's "white boats" to decoupled commercial RSA vessels, etc. What is critical is being able to evaluate/quantify the benefits and costs of adopting any of these alternative objectives and decisions. Not only does it appear to be a good Council practice for reaching a consensus on RSA direction, but it will also be required by applicable law and regulation for the Magnuson Act and federal rulemaking procedures.

#### Ensure compliance with the reporting and use of the RSA quota

In addition to maximizing revenues, a well-designed RSA program would also minimize inefficiencies and transaction costs in the sale of quota that would eat into the revenue. This could include minimizing the costs of tracking quota possession/use over time and the overall execution/administration of the RSA program itself to help the Council maximize the net revenue and benefits from its RSA research investment.

There have been significant advances in electronic reporting systems since the original RSA program ended, and the adoption and use of technologies that eliminate duplicative and ineffective reporting systems can hopefully be avoided in any re-designed system. Some of the software used in cooperative research and various catch share systems may be models for consideration to avoid reinvention and duplication of effort that would only decrease net benefits of a new RSA program.

Historically catch reporting and enforcement in NOAA have been handled separately, and while progress continues, there may be opportunities in future for breakthroughs with VMS/satellite GPS/RADAR and next generation communication technology solutions that could benefit RSA perhaps through public private partnerships. In the interim, close collaboration with enforcement at the state and federal level and General Counsel on design and execution can improve compliance rates relative to the original RSA.

## 2. PROGRAM DESIGN

The two main alternative approaches for implementing the RSA program given the identified objectives above are: (i) bilateral arrangements between research principal investigators (PIs) and industry members (e.g., scallop program); and (ii) competitive markets in the form of different auction formats. Auctions are mechanisms for selling (or buying) items by offering them up for bid and selling the items to the highest bidders. In this case, the item for sale is RSA quota. Auctions foster competition among bidders to increase seller's revenues and allow for price discovery when the value of the items is unknown. There are many alternative types of auction markets, with different settings calling for different designs. Bilateral arrangements, on the other hand, are agreements between PIs and vessel owners whereby grant recipients and industry partners share the proceeds generated from harvesting the RSA quota.

The two approaches mentioned above are not equally equipped to address the secondary objectives (i) -(iv) listed above. Auctions, if properly designed and implemented, will maximize RSA quota revenue through thick markets and competition.

However, if fairness is understood as equal access to the quota, competitive markets will not achieve that objective. On the other hand, if fairness is conceptualized as access to the quota according to willingness-to-pay, then auctions will meet the objective. (ii) In the case of the bilateral arrangements, it is entirely up to the recipients of RSA grant awards to decide who they partner with to use compensation fishing opportunities. To the extent that revenue is not their unique consideration when selecting industry partners, bilateral agreements may offer access to quota to harvesters that would not be awarded RSA quota at the auctions. Alternatively, if PI or fishermen's transaction costs are high, a much smaller group of fishermen might ultimately have an opportunity to access the quota when compared to auctions. Regarding objective (iii), markets for quota are not guaranteed to ensure collaboration between the scientific and fishing communities since auctions decouple the research from the harvest of the RSA quota. In contrast, in programs such as the scallop RSA, researchers often work with a relatively small group of vessels with whom they are familiar due to geographic proximity or some other reason. This type of interaction is more conducive to continued collaboration between industry and PIs. Finally, (iv) allocating the quota to many vessels and then allowing leasing, as the auctions do, makes enforcement more challenging and presumably more expensive. For example, it increases the number of landing ports for the RSA quota. Oversight entails substantial investment from NMFS across several line offices, including the Sustainable Fisheries Division, Analysis and Program Support Division, and Office of Law Enforcement. Table 1 below summarizes these points.

**Table 1: Comparison in Ability to Achieve Secondary Objectives**

(COMPETING) OBJECTIVES	BILATERAL AGREEMENTS	MARKETS (AUCTIONS)
REVENUE MAXIMIZATION		✓
FAIRNESS OF ACCESS (IF UNDERSTOOD AS EQUAL ACCESS TO QUOTA)	✓	
LONG-TERM COOPERATION BETWEEN RESEARCHERS & INDUSTRY	✓	
ENFORCEMENT & COMPLIANCE	✓	

### 3. SCENARIO ANALYSIS

The SSC Economic Workgroup (WG) has conducted a scenario analysis to compare revenue generation between competitive markets (auctions) and bilateral agreements, the two main approaches for implementing the RSA Program.

There was no granular data (i.e., data on individual bids) made available on the auctions from the former RSA Program. Without information on the individual bids, it was not possible to estimate the distribution of harvester’s willingness to pay for RSA quota. Unfortunately, the distribution of willingness-to-pay for quota is critical for studying the revenue advantage of the auctions, one of the initial planned analyses for the project. Barring these detailed data, the Economic WG relied on the summary data that was provided by the National Fisheries Institute (NFI) who oversaw the Mid-Atlantic auction program. The summary data utilized included the average winning bid per year and species, coupled with average number of participants per year and species. Specifically, the simulations that support the scenario analysis use a calibrated model based on summary statistics on bids and # of bidders for summer flounder quota. The distribution of willingness to pay used in the simulations is assumed and not estimated from data. Importantly, the simulated scenarios are hypothetical and only intended to illustrate relative performance on revenue generation rather than to estimate dollar amounts raised under each approach. The simulations only explore a few plausible scenarios and do not represent an exhaustive list. Each scenario is replicated 1,000 times.

Table 2 below summarizes the findings of the simulations. The right column shows how much higher the revenue from the auctions is compared to the revenue from the bilateral agreements. For example, the baseline case generates (on average) 28% higher revenue than the bilateral arrangements. This baseline scenario assumes supply of 400,000 lbs. of summer flounder RSA

quota in lots of 10,000 lbs. each, sequential English auctions (species-lot level) in which recreational and commercial bidders can participate, 150 bidders, a minimum (reserve) price of \$1.50/lb., \$100 per vessel in entry costs and 4% of proceeds in administrative costs.

The revenue advantage observed in the baseline case, however, decreases in the other scenarios. When separate auctions are conducted for recreational and commercial vessels, as opposed to auctions in which anybody can bid regardless of sector, the auctions generate 15% more revenue than the bilateral agreements. Likewise, high entry costs and administrative fees of the scale observed in the former RSA program would reduce the revenue advantage of the auctions to 17% of the revenue from bilateral arrangements. The possibility of collusion by a small number of bidders has a smaller impact but also reduces the revenue advantage of the auctions (to 20%). Lastly, separate auctions combined with high entry and administration costs, would significantly reduce the advantage of competitive markets over bilateral agreements in generating revenue (5%). Note that these results do not account for the additional enforcement costs that may be needed to monitor the RSA quota under the auctions.

The main conclusion from these simulations is that the performance of the preferred mechanism will critically depend on the design and implementation. Moreover, transparency and bidders' trust in the rules of the auctions will be critical in determining the success of these markets in raising revenue.

**Table 2: Summary of Revenue Comparison between Auctions and Bilateral Agreements**

SCENARIO	COMPARISON (EXCESS REVENUE IN THE AUCTION)
BASELINE CASE	28%
SEPARATE COM. & REC. RSA AUCTIONS	15%
AUCTION WITH HIGH ADMIN. AND ENTRY COSTS	17%
AUCTION WITH COLLUSION	20%
SEPARATE COM. & REC. AUCTIONS WITH HIGH ADMIN. AND ENTRY COSTS	5%

#### 4. ANCILLARY BENEFITS

Beyond their ability to foster competition to generate revenue for the program, auction markets for RSA quota may generate ancillary benefits and information valuable for management, as indicated in Table 3.

Information on the bids submitted by recreational and commercial vessels would provide data on willingness-to-pay for RSA quota from each sector. In turn, this granular information, if available to the Council, could inform future intersectoral quota reallocation decisions.

Additionally, bidding behavior regarding RSA quota for different species may also provide information on technical complementarities (i.e., jointness) in the harvest of different species. Since the RSA quota is only valuable to harvesters to the extent it provides them with fishing opportunities they would not otherwise have (e.g., fishing after the season has ended, increasing bag limits for charter boat anglers, etc.), bidding in the auctions provides information on the value that industry attaches to relaxing some of the regulations. A competitive market also ensures the RSA quota is allocated according to willingness-to-pay, increasing allocative efficiency, and makes it easier for vessels that mid-season find themselves unable to fish their quota to transfer that quota to other boats.

**Table 3: Ancillary Benefits of Auctions**

<b>ANCILLARY BENEFITS (AUCTIONS)</b>
INFORMATION ON QUOTA DEMAND FROM REC. AND COMMERCIAL SECTOR
INFORMATION ON SPECIES' HARVEST COMPLEMENTARITIES
WILLINGNESS TO PAY FOR ALTERNATIVE REGULATORY WAIVERS
HIGHER LIKELIHOOD RSA QUOTA GETS USED EACH SEASON
INCREASED EFFICIENCY