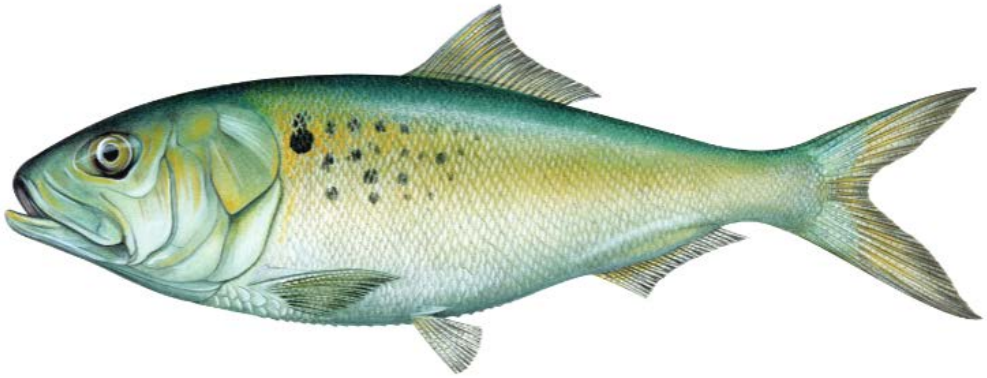
Board Working Group Report on Revisiting Allocation



Atlantic Menhaden Management Board
August 2015

Vision: Sustainably Managing Atlantic Coastal Fisheries

Revisiting Allocation

Background

- Amend 2: Board to revisit allocation in 2016
- State by state allocation currently
  - Allocation based on average landings from 2009-2011.

Revisiting Allocation

- Same Board subgroup working on ERPs
- Explored full range of allocation options
- Old and new concepts
- Started broad then focus on the specifics
- Draft Goal:
  - Fair and equitable distribution of coastwide total allowable catch among states/jurisdictions, regions, and fishery interests.

Revisiting Allocation

- WG considered landings history, the performance of state fisheries, and the challenges associated with the current management program.
- Those challenges include:
  - minimizing discard mortality
  - accommodating small-capacity fisheries, true bycatch fisheries, small scale fisheries and fixed-gear fisheries
  - aligning harvest opportunities with the distribution and size composition of the resource;
  - ensuring equitable access to quota among gear types and management units;
  - and striking a fair and equitable balance between current needs/interests/capacity and future growth opportunities

Revisiting Allocation

- **A: Coastwide quotas**
- **B: State by State quotas**
- **C: Regional quotas**
  - Two regions: (1) North (2) South. Machipongo Inlet, VA is divide
  - Two regions: (1) Coastwide (2) Chesapeake Bay
  - Three regions: (1) New England (2) Mid-Atlantic (3) Ches Bay South
  - Four regions: (1) New England (2) Mid-Atlantic (3) Ches Bay (4) South Atlantic
- **D: Quotas by disposition (i.e., bait, reduction)**

Revisiting Allocation

E: Fleet Capacity Quotas

- WG spent a majority of time discussing the fleet capacity allocation option.
  - Reviewed gear specific landings history
  - Evaulated gear permitting and management in states
  - Examples of three and two fleet options

Three Fleet Example

1. Small Fleet

- Types of gears include, but not limited to, cast net, trawl, trap/pot, haul seine, fyke net, hook and line, other.
- Approximately 3.14 million pounds annually or 0.7% of coastwide total allowable catch (TAC) from 2009-2012.
- Managed with a soft quota
  - (e.g., 1% of coastwide TAC, or 3.5 – 5.0 million lbs)

Three Fleet Example

2. Medium Fleet

- Types of gears include, but not limited to, pound nets, gill nets
- Approximately 18.92 million pounds annually or

~ 5% of the coastwide TAC.

- Managed with a soft or hard quota
  - (e.g., 6-8% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.

Three Fleet Example

3. Large Fleet

- Types of gears include, but not limited to, purse seines and pair trawls
- Approximately 408.7 million pounds annually or ~95% of the coastwide TAC.
- Managed with a hard quota
  - (e.g., 93-96% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.

Two Fleet Example

1. Small Fleet

- Types of gears include, but not limited to, cast net, trawl, trap/pot, haul seine, fyke net, hook and line, pound nets and gill nets.
- Small capacity fleet could be defined by a trip limit.
- Alternatively, trip limits could be implemented if small capacity harvest fires established triggers (see below).
- Approximately 22 million pounds annually or 6% of coastwide landings from 2009-2012.
- Managed with a soft quota (e.g., 6% of coastwide TAC), but this harvest would be allowed to fluctuate above the quota in year when fish are available

Two Fleet Example

1. Small Fleet Continued

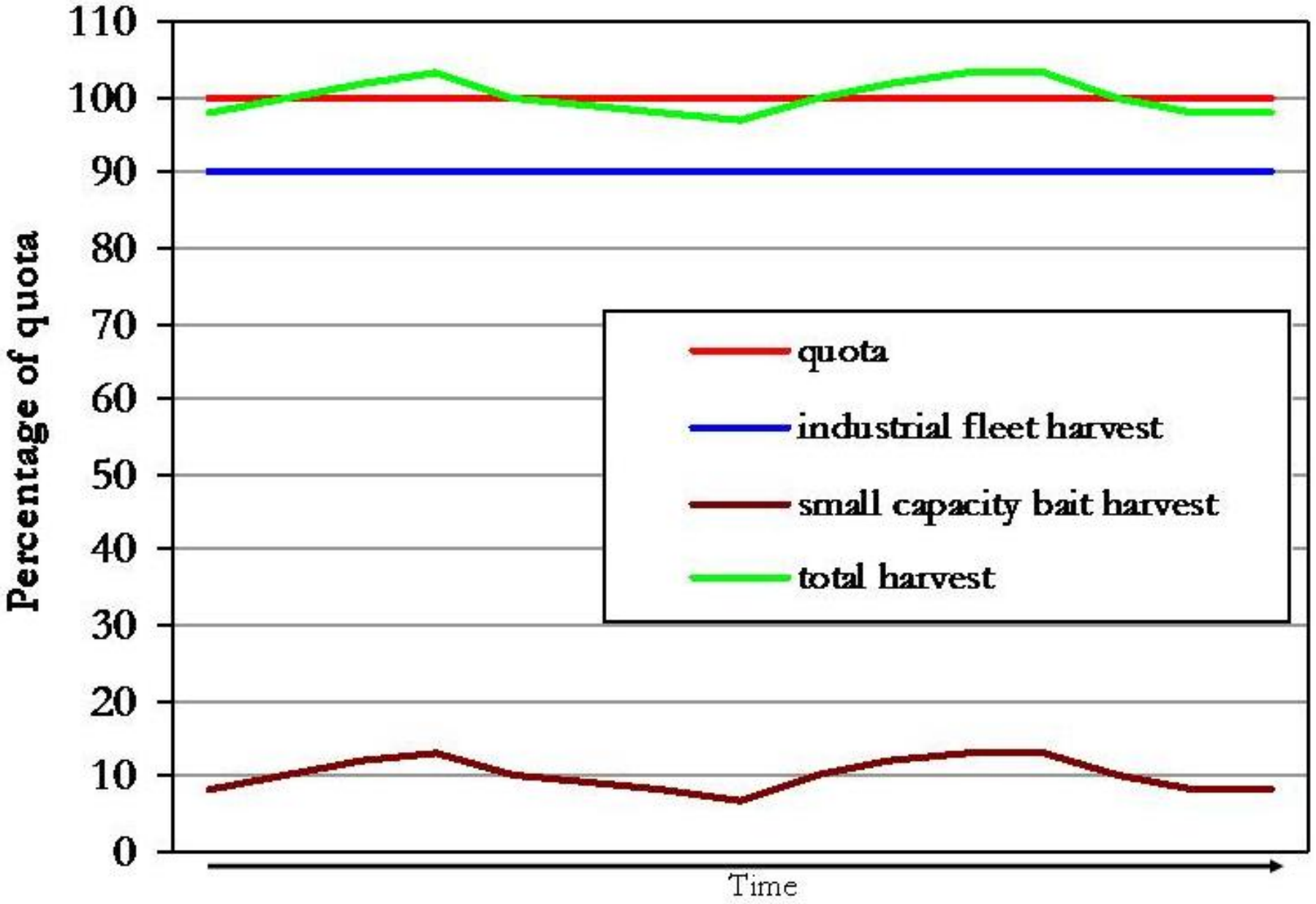
- Annual review of small scale catches relative to coastal catch – these fisheries operate in aggregate on a small portion of the coastal TAC.
- Set triggers if small scale fleet harvest grows to an unacceptable level.(e.g. implement trip limits, return to state by state quotas for small scale fleets).
- States could implement management to prevent substantial growth in their small scale fisheries

Two Fleet Example

2. Large-Capacity Fleet:

- Types of gears include, but not limited to, purse seines and pair trawls
- Approximately 408.7 million pounds annually or ~95% of the coastwide TAC.
- Managed with a hard quota (e.g., 93-96% of the coastwide TAC).
- Note: the Board may wish to consider further allocation (e.g., regional, state by state) to provide equitable access to the quota.

Two Fleet Example



Allocation Options

- **F: Minimum Fixed Quotas**
- Each state would receive a minimum fixed percent quota (e.g., 1% of the coastwide TAC). If a state's quota was not used it could be transferred.
- **G: Seasonal Quotas**
- This is a better management option implemented under a regional or state by state quota allocation.

Allocation Timeframes

- Potential Allocation Timeframes
- 2009-2011: Status quo, timeframe used for state by state allocation in Amendment 2
- 2009-2012: Similar timeframe to Amendment 2, but includes 2012 which was the last year prior to the implementation of Amendment 2 in 2013.
- Weighted allocation with half weight for a long period, and half weight for more recent short period.
- Example: half weight for 2009-2012, and half weight for 2013-2015

Issues for Further Consideration

- Bycatch allowance
- Episodic Events Set Aside
- quota rollovers, paybacks, and transfers
- location of harvest
- accommodation for ecosystem-based management programs that establish harvest controls at local/regional levels.

Update on Menhaden Socioeconomic Analysis

Request for Proposals update

- Goal: socioeconomic analysis of the Atlantic menhaden commercial fisheries
- CESS met in September and October to discuss objectives and deliverables
- Primary objective: explore social equity and distributional consequences of management change on both the Atlantic menhaden commercial bait and reduction fisheries

Coastwide bait fishery deliverables

- Trend in average and total revenues from menhaden (by state and year)
  - Distribution of revenues, operational costs
- Total bait sales and proportion of menhaden sales
- Identify the clients or purchasers (both commercial and recreational)
  - Identify the product forms and prices
    - Wholesale with prices and area
    - Retail with prices and area

Reduction fishery deliverables

- Trend in landings and revenues ideally with operational costs
- Time series with capacity utilization and fixed costs
- Time series in quantity of quota allocated, quota landed, and menhaden processed
- Importance in the community in terms of how many direct and ancillary jobs supported, etc.
  - Change over time

Request for Proposals update

- Characterization of the coastwide menhaden fishery is a necessary first step **before** economic analyses to explore allocation trade-offs
- Proposed project will provide useful socioeconomic information, but not optimize allocation
- Recommend that Board Allocation Subgroup meet with CESS RFP Subcommittee
  - Short delay in project start, but deliverables expected early 2017 still

Ecosystem Management Objectives Workgroup (EMOW)

Shanna Madsen

BERP WG Coordinator

Background

- The BERP WG has been tasked to develop ecological reference points (ERPs)
  - Incorporate predatory demands
- *Ecological Reference Points for Atlantic Menhaden* report
  - Presented a suite of potential modeling approaches for SEDAR 40 feedback
  - Suggested facilitated workshops to develop specific management objectives
  - Necessary to guide model development

Introduction

- Ecosystem Management Objectives Workshop
  - Dr. Michael Jones, SEDAR 40 Chair
  - Webinar Aug 14th
    - Reviewed agenda, expectations, workshop goals
    - Great Lakes case-study
- Workshop Aug 31st- Sept 1st
  - Report in meeting materials

Management Board Subgroup

Robert Boyles

Bob Ballou

Jim Gilmore

Russ Allen

Lynn Fegley

Rob O'Reilly

Advisory Panel Subgroup

David Sikorski

Ken Hinman

Ron Lukens

Jeff Kaelin

Technical Representatives

Amy Schueller

Jason McNamee

Matt Cieri

Staff

Katie Drew

Mike Waine

Shanna Madsen

Structured Decision Making

- Logical, organized, transparent approach to identify and evaluate options
  - Define objectives and associated measures of performance
  - Identify decision alternatives
  - Evaluate the consequences of alternatives relative to objectives
    - Consider uncertainty and risk
  - Evaluate trade-offs among competing objectives
  - Identify “best” alternatives through balancing trade-offs and reducing risk
  - Implement and monitor

Structured Decision Making

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Setting Objectives

- Fundamental
  - The end you are trying to achieve, statements about what a group truly values
- Means
  - "Stepping stones" – the means that get us to the ends represented by our fundamental objectives
- Performance measures
  - How you determine you have met an objective

Setting Objectives

- Fundamental
  - Ensure a full and enjoyable retirement
- Means
  - Have sufficient retirement savings
- Performance measure
  - Retirement risk calculator

Fundamental Objectives

- Achieve broad public support for management
- Sustain menhaden to provide:
  - For fisheries
  - For predators
  - Historical and cultural values
  - Other ecosystem services
  - →*All to provide both social and economic benefits*
- Minimize risks to sustainability due to a changing environment
- Provide stability for all types of fisheries (for both menhaden and species that depend on menhaden)
- Sustain ecosystem resiliency or stability

Means Objectives

- Science
  - Increase knowledge base
  - Better communication of science
  - Account for variation
- Management
  - Define clear objectives
  - Provide timely advice
- Ecosystem
  - Ensure adequate supply of menhaden for predator groups & food web
- Account for spatial/temporal variation when managing trade-offs
- Minimize the risks of collapse
  - For menhaden, the fishery, and the ecosystem

Performance Measures

- Sustain menhaden to provide for fisheries
  - Meeting or exceeding (positively) reference points
  - Non-truncated age distribution
  - Achieving yield objectives for all fisheries
- Sustain menhaden to provide for predators
  - Same as for fishery, assuming ERPs are used
  - Predators in a healthy nutritional state
  - Distribution of menhaden relative to predator requirements
- Provide stability for all types of fisheries (both direct and indirect)
  - Variability in employment and yield

Outcome

- Discussed intersection between BERP WG models and fundamental objectives
  - Agreed that not all objectives can be met by ecosystem models
- BERP WG assessed the ability of each modeling approach to address EMOW-identified management objectives
- Established potential objectives for ecosystem management
- This is a first step in SDM
  - Management strategy evaluation

Ecological Reference Point Recommendations for Draft Amendment 3 Development

Menhaden Board Meeting

Annual Meeting, St. Augustine, FL

November 3, 2015

Background

- During the SEDAR process put forth a number of tools to address ERPs
- BERP WG used the EMOW report and the SEDAR 40 peer review to:
  - *Identify* fundamental objectives and performance measures that could be addressed using ecological models and approaches
  - *To assess* the ability of each ERP model or tool to address management objectives & performance metrics from the EMOW report.
  - *Make recommendations* on the appropriate tools to move forward.

Objectives Discussion

- BERP WG recognizes that some Fundamental Objectives cannot be addressed without outside help and expertise
  - Example: “Sustain Atlantic menhaden to provide for historical and cultural values” or “Achieve broad public support for management”
  - Requires additional data (e.g., socioeconomic) or identification of relationships that are outside the purview of the BERP WG

Original Suite of Modeling Approaches

APPROACH	BRIEF SUMMARY OF ERP/EBFM PRODUCTS	TIME REQUIRED TO DEVELOP
Ecosystem indicators	EBFM monitoring tool	1-2 months, annual updates
Nutrition Ref Points	ERPs for prey and predators, EBFM monitoring tool	1-2 months. **Additional data collection program required.**
Production models		
Steele-Henderson	MSY-based ERPs for menhaden, consumption estimates	6 months-1 year
Time-varying *r*	MSY-based ERPs for menhaden	6 months-1 year
Single-species models		
BAM-based forage services ERPs	SPR-based ERPs for menhaden	Completed. Associated harvest calcs deliverable by early 2015.
BAM or SS-based time-varying M tuned to consumption index	SPR-based ERPs for menhaden	1 year
BAM-based MSE	MSE platform for testing performance of single-species ERPs	Planned for 2015
Multi-species models		
MSVPA or MSSCAA + BAM projections	Estimate of minimum forage needs for major predators	Near completion. Could be available early 2015.
MSSCAA	Forage services ERPs for menhaden, consumption estimates, platform for MS-MSE	1 year to finalize model, 3-4 years for MS-MSE
Ecopath with Ecosim	Forage services ERPs for menhaden, consumption estimates, platform for MS-MSE	2 years for model development, 3-4 years for MS-MSE

Model Selection

- Models were selected based on:
  - ability to address multiple objectives
  - ability to predict and monitor performance measures
  - technical merits
  - adherence to the SEDAR recommendations
- ***Recommended*** moving forward with surplus production & multispecies statistical catch-at-age
- ***Recommended*** ecosystem indicators as monitoring tool
  - The majority recommended this contextual approach
  - Some felt that stand-alone control rules could be based on EI
  - Examine more closely at our next meeting

Table 1: BERP WG recommended modeling approaches to develop ERPs for Atlantic menhaden and the fundamental objectives they address

	FUNDAMENTAL OBJECTIVES										
	Sustain menhaden to provide for fisheries				Sustain menhaden to provide for predators				Provide stability for all types of fisheries		
	PERFORMANCE MEASURES										
	Abundance/ biomass of menhaden	Menhaden yield objectives	Age Composition	Historical distribution (Age comp as proxy)	Abundance/ biomass of predators	Predator yield objectives	Predator nutrition	Prey availability relative to predator distribution	Stability in yield for directed menhaden fisheries	Stability in yield for non-menhaden fisheries	**Timeline for management use**
Single-Species Models											
BAM Statistical Catch-at-Age Model (current model)	X	X	X	X					X		Ready now
Multi-Species Models											
Surplus Production											
Steele-Henderson	X	X					X (proxy)		X		6 months-1 year to finalize, 2-3 years for committee review, peer review
Catch-at-Age											
Multi-species Catch-at-Age (MSSCA)	X	X	X	X	X	X	X (proxy)	*	X	X	1 year to finalize model, 2-3 years for committee review, peer review

*: Possible to develop a spatially-explicit version of the model that would meet that performance objective, but would require extensive additional work (10+ yrs)

Whittled list down based on the objectives defined in EMOW Report

ERP Timeline

- Full process will take 3-4 years to complete
  - Implement the code and test
  - Gather, update, vet the data on predators and prey (catch, samples, indices, diet data, etc.)
  - Examine sensitivity analysis, diagnostics, and model behavior: choose final base runs
  - Compare with external efforts
    - (Ecopath w Ecosim, another surplus production model)
  - Update and get feedback from the Board
  - Develop TOR and go through peer review
  - After acceptance by Review and Board, conduct MSE

In the Interim…

- ***Recommended*** the use of the BAM single-species reference points accepted from Benchmark
- Board may consider the use of *ad hoc* ecological approaches (such as Lenfest and others) or <u>any</u> approach they feel necessary
  - ***Did Not Recommend*** *ad hoc* approaches as outlined in a previous memo and after reconsideration
- If the BERP WG recommendations are approved we will move forward with the assessment process

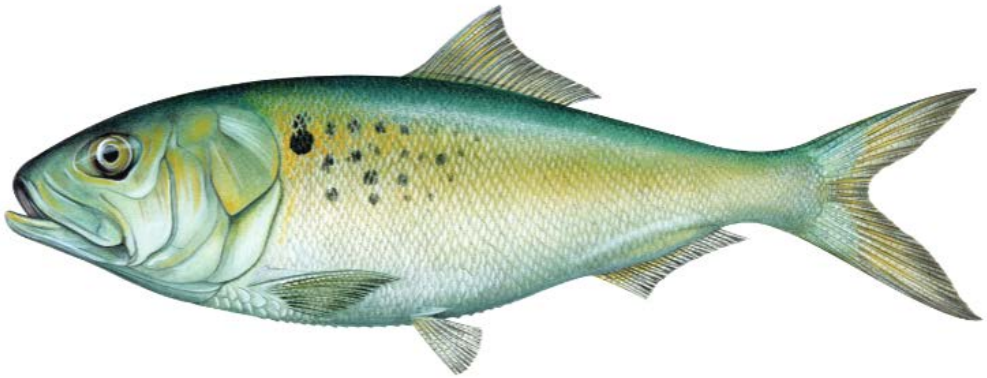
Questions?

Menhaden Board Meeting

Annual Meeting, St. Augustine, FL

November 3, 2015

Amendment 3 Timeline Options



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Two Issues for Amendment

- 1. Allocation
- 2. Reference Points

<u>Things to remember:</u>

- 187,880 mt TAC for 2015 and 2016
- Stock Assessment Update in 2017

Allocation Considerations

- Board WG has potential list of allocation options compiled
- CESS Socio-economic analysis available in early 2017
- Does the Board want to wait for the socio-economic analysis before moving forward revisiting allocation?

Allocation Options

1. Don’t wait for socio-economic analysis

-PID Feb 2016, Amendment Aug 2016

-Implementation in 2017

2. Wait for socio-economic analysis:

-PID Feb 2017, Amendment Aug 2017

-Implementation in 2018.

Reference Points

- Current reference points
  - Passed peer review SEDAR 40
  - approved for management use
  - not yet part of a management document
- Ecosystem Reference Points
  - BERP ERPs available 2019-2020 to meet management objectives
  - Lenfest ERP available, but BERP WG does not recommend using for management

Reference Point Options

1. Addendum to consider current ref pts, and lenfest ERP
   - Implementation in 2017
2. Amendment to consider current ref pts, and lenfest ERP
   - Implementation for 2017
   - Implementation for 2018 (matches with CESS)
3. Amendment to consider current ref pts, and all other ERP options.
   - Implementation in 2020

Questions?