Impacts on Vessel Fishing Revenue
Relative Change in Fishing Revenue

• Input from area closure model
• Expansion to vessel-level total fishing revenue
• Estimation of vessel-level total revenue change
• Reporting categories
• Expansion to total sub-regional revenue change
Input

• Math programming model assumed to be a sample of groundfish activity
  – As long as an estimate of relative change not a problem with respect to groundfish revenue

• Math programming model does not include revenue from other fisheries
  – Could misrepresent actual impacts depending on dependence on groundfish for total fishing income
  – RFA requires consideration of impact from the perspective of total business income
Total Vessel-Level Fishing Revenue (Baseline)

• Estimate observed 1998-2001 average revenue by vessel from dealer data
  – Average revenue from non-groundfish trips
  – Average revenue from groundfish on groundfish trips
  – Average revenue from non-groundfish on groundfish trips
  – Calculate ratio of non-groundfish revenue to groundfish revenue on groundfish trips
Vessel-Level Revenue Change

• Step 1: Calculate percent change in groundfish revenue from math programming model

\[
\text{DeltaGF} = \frac{(\text{GFVAL1} - \text{No Action})}{\text{No Action}}
\]
Vessel-Level Revenue Change (cont.)

• Step 2: Apply result from Step 1 to baseline groundfish revenue

\[ \text{NewGF} = (1 + \Delta GF) \times \text{BaseGF} \]
Vessel-Level Revenue Change (cont.)

• Step 3: Apply the result of Step 2 to the baseline ratio of non-groundfish revenue to groundfish revenue

\[ \text{NEWNonGF} = \text{NewGF} \times \text{Ratio} \]
Vessel Level Revenue Change (cont.)

- Step 4: Sum baseline revenue from non-groundfish trips and the result of Steps 2 and 3 to obtain new total revenue

\[ \text{NewTot} = \text{BaseNonGF} + \text{NewGF} + \text{NewNonGF} \]
Vessel-Level Revenue Change (cont.)

• Step 5: Calculate percent change in total fishing income

\[
\frac{(\text{NewTot} - \text{BaseTot})}{\text{BaseTot}}
\]
Reporting Categories

• Dependence on Groundfish
• Groundfish Sales
• Total Sales (IRFA)
• Vessel length
• Gear
• Gear/Length
• Home Port State
• Port Groups
Sub-Regional Revenue Change

• Relative revenue change based on a sample of vessels landing groundfish

• Need to expand to population
  – (1) Estimate 1998-2001 average total revenues from all trips landing groundfish by gear sector and sub-region
Sub-Regional Revenue Change (cont.)

- (2) Aggregate baseline total revenue on groundfish trips by gear sector and sub-region (from sample)
- (3) Aggregate new total revenue on groundfish trips by gear sector and sub-region
- (4) Divide (3) by (2)
- (5) Multiply (4) by (1)
- (6) Subtract (5) from (1)
- Result from (6) was used as estimated direct impact on commercial fishing output in I/O model