Harbor Economic Impact Model (HEIM)

Presentation to

Alaska Association of Harbormasters and Port Administrators

Mike Fisher

October 2004

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Agenda

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- History of the Model
- HEIM Version 1.1
- Demonstration of Model
- Potential Future Improvements
- Where to Learn More
- Questions and Comments

History of the Model

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- **PURPOSE**
  Develop user-friendly computer model to:
  - Estimate benefits of harbor facilities to:
    - Local community
    - Region (Borough or Census Area)
    - State
  - These benefits often not addressed by Army Corps of Engineers
  - Without this information it is difficult to document benefits to decision-makers

History of the Model

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- **Data collected from**
  - 8 harbors
  - 309 recreational vessels
  - 64 charter/tour/other vessels
  - 45 commercial fishing
  - 54 businesses
  - Reports by ACOE and DOT&PF
- **Inner harbor cost model from DOT&PF**
- **Beta model presented October 2003**
- **Final model completed March 2004**
- **Based in Microsoft Excel 2000**

HEIM Version 1.1

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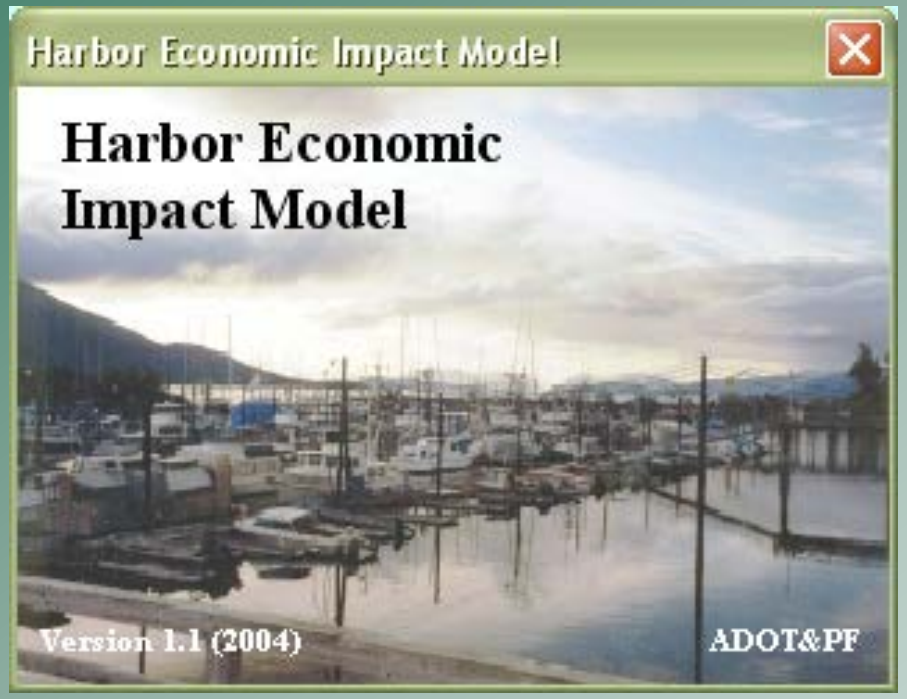

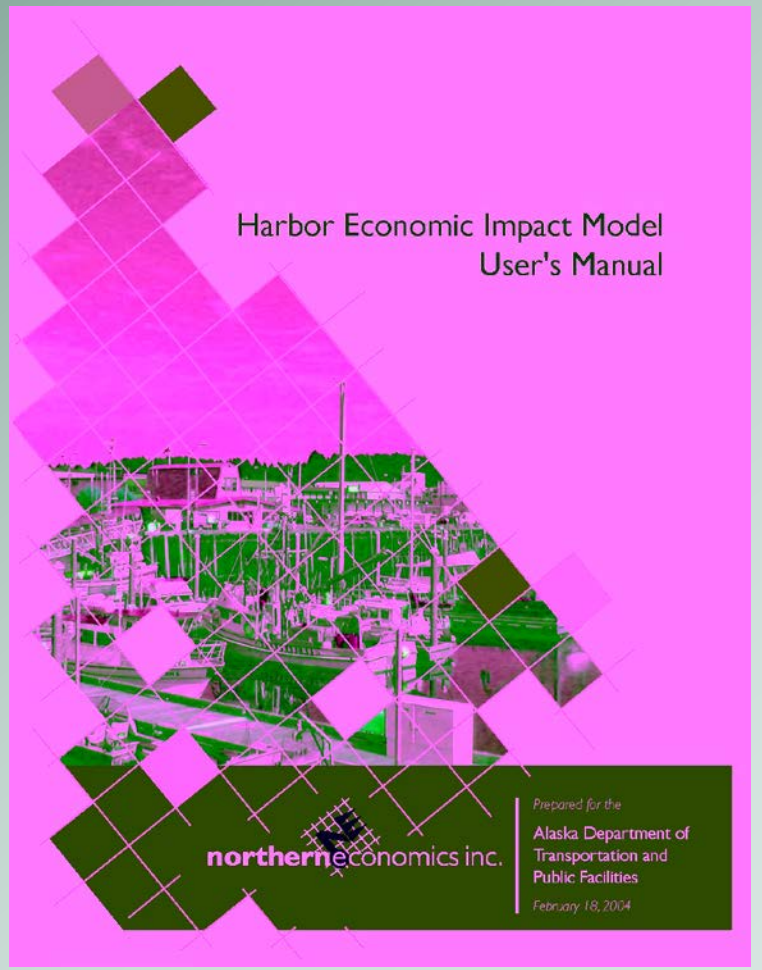

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- **Basic use:**
  - Select your community
  - Verify and enter harbor characteristics
  - View impacts of harbor
- **Advanced uses:**
  - Determine impacts of changes in harbor

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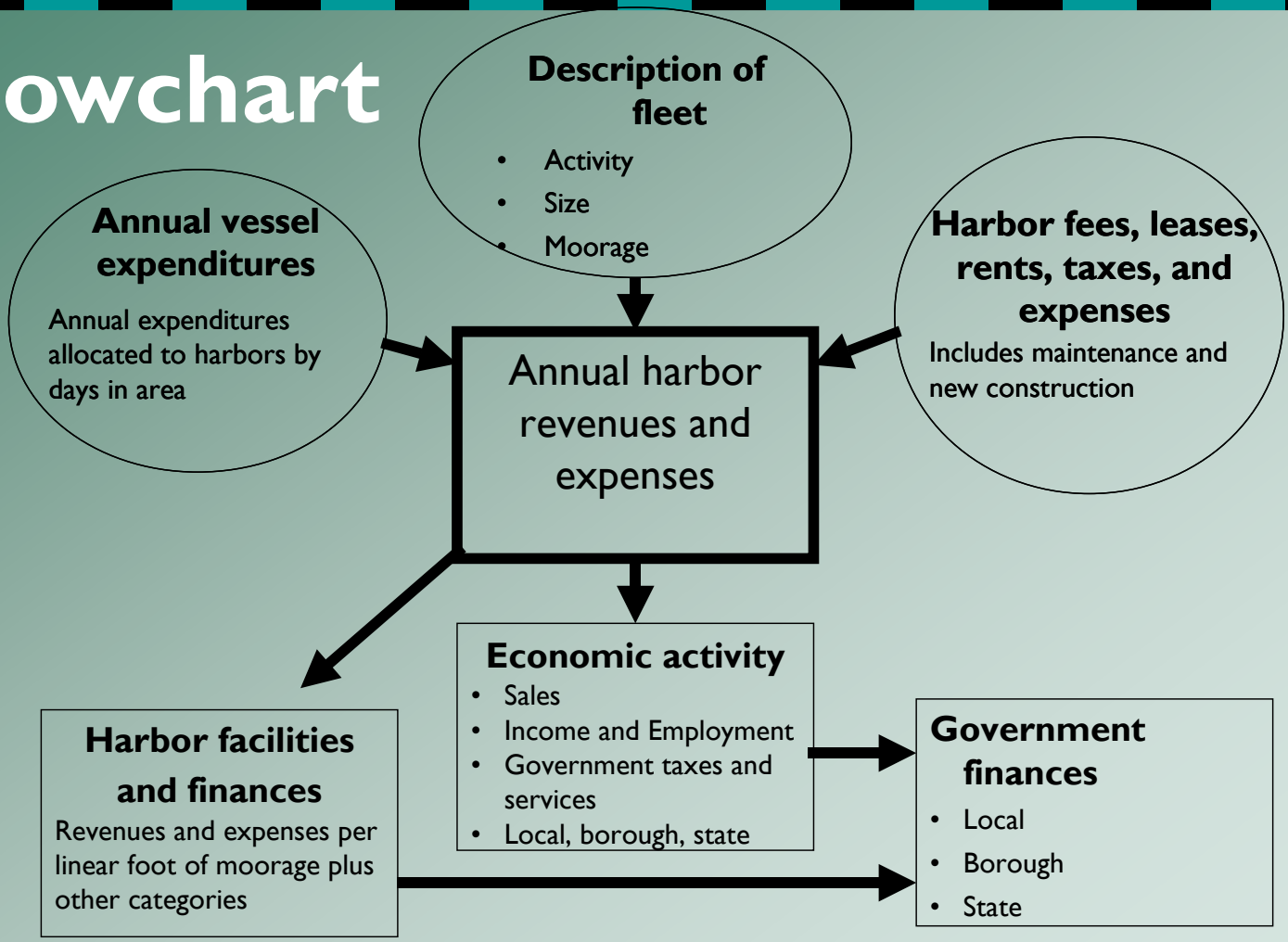
Flowchart



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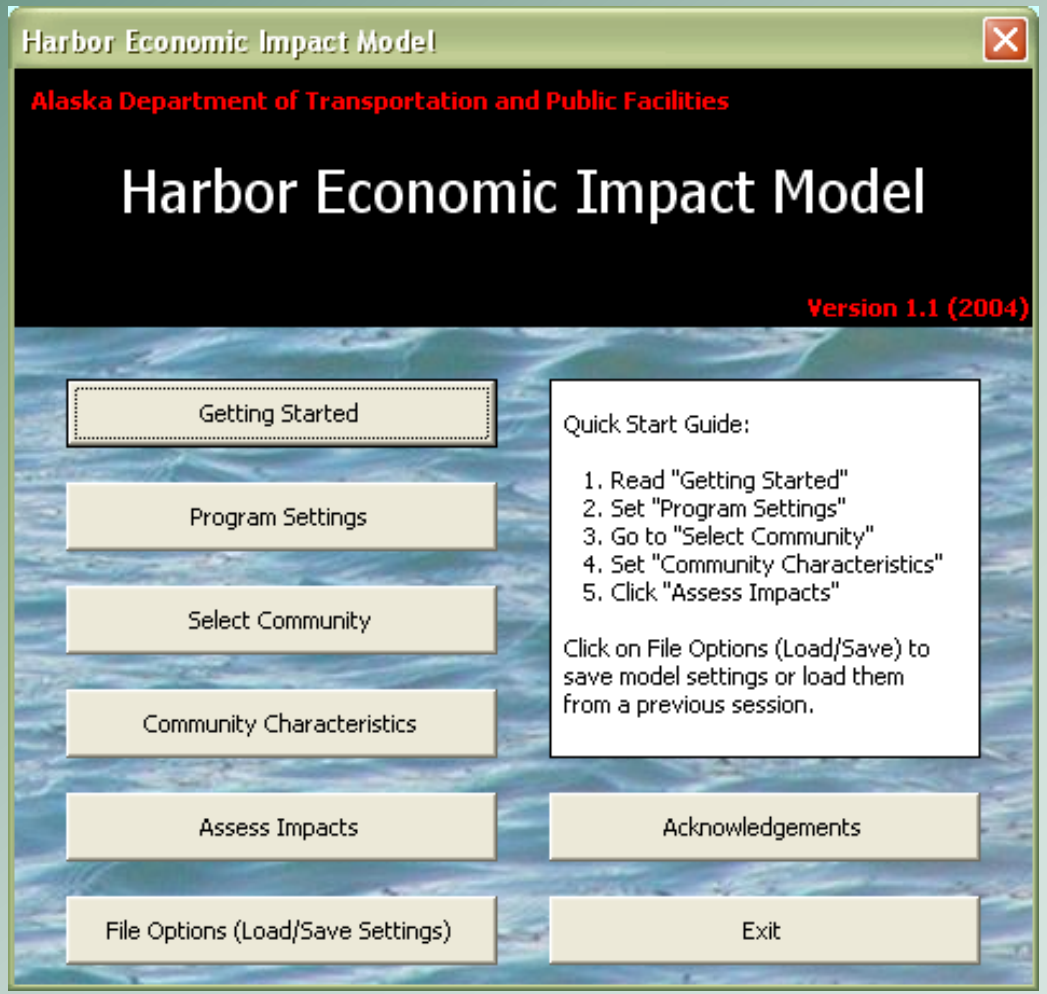
Main Menu



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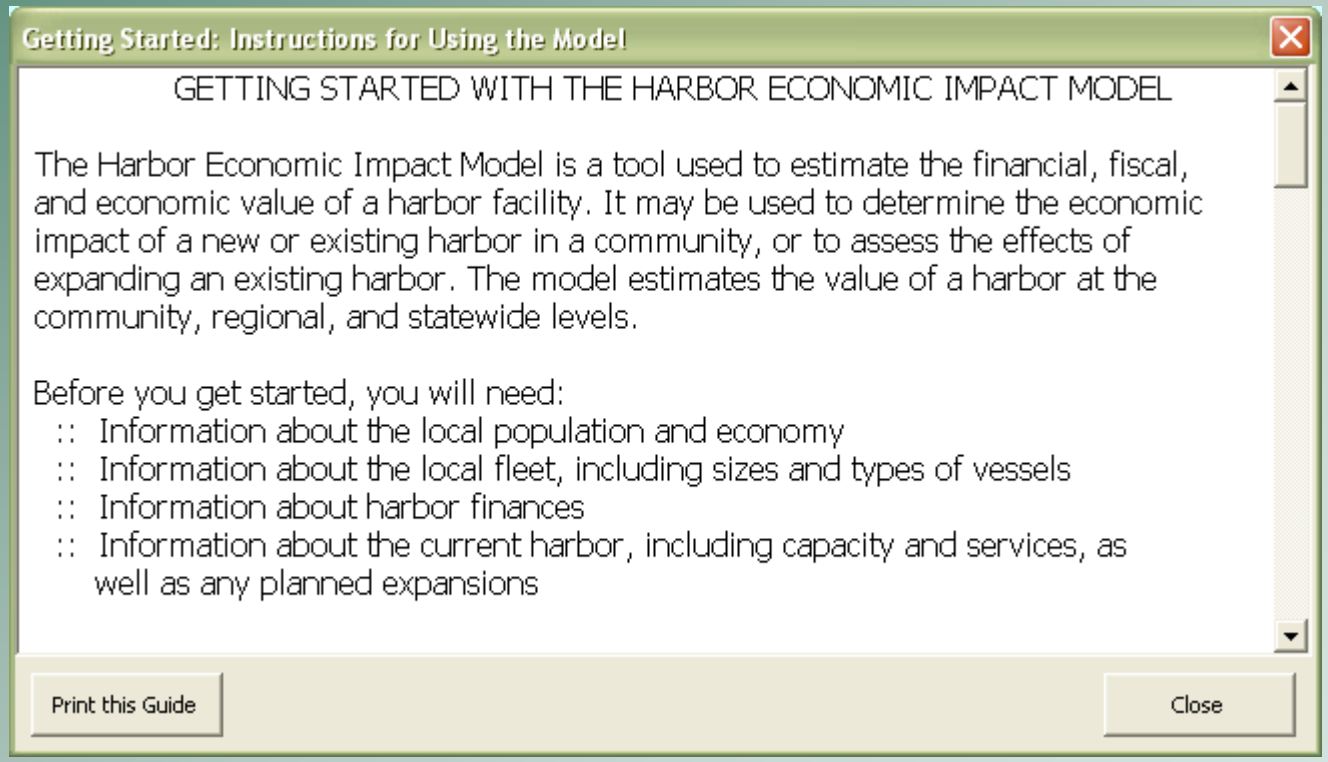
Getting Started Guide



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Select Your Community

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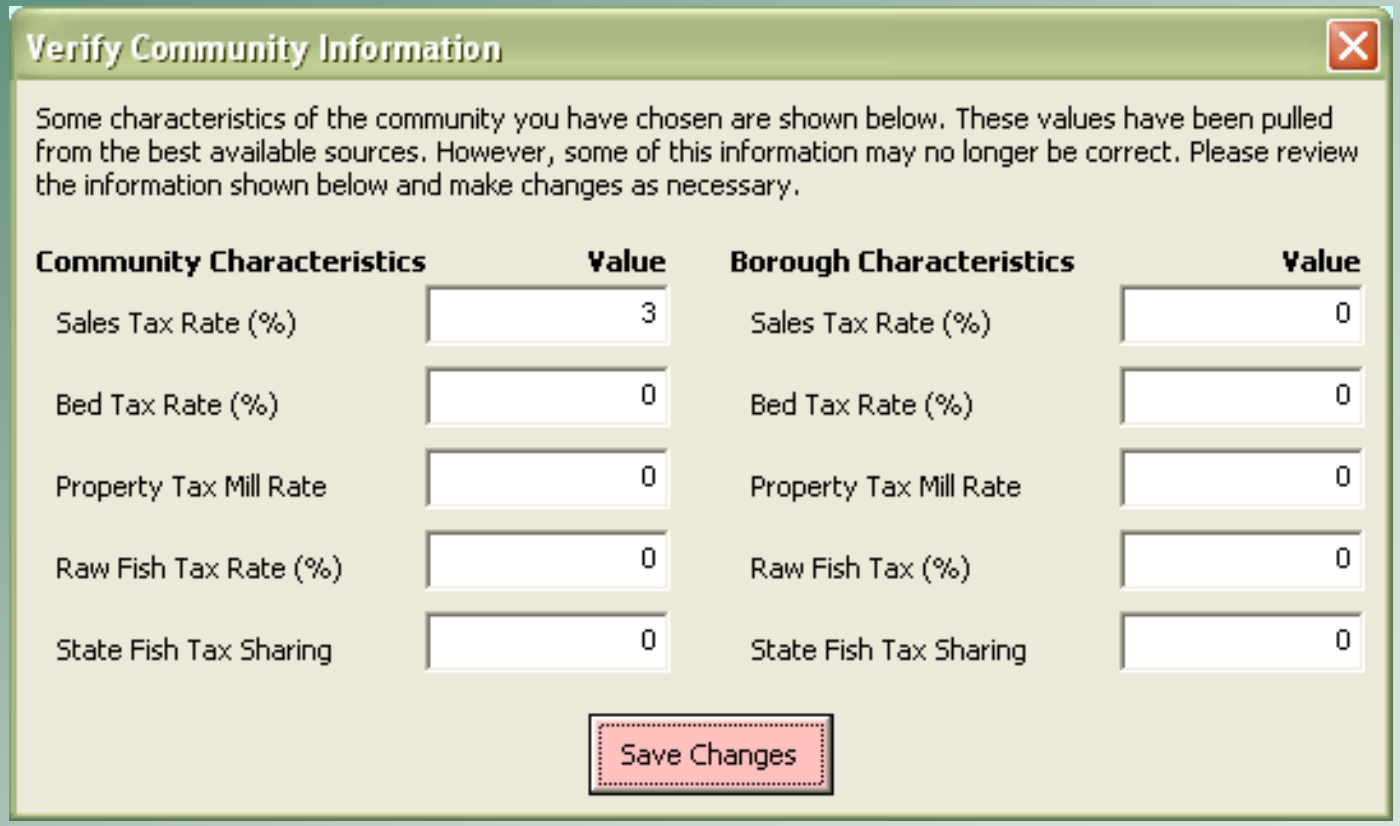
Verify Community Information



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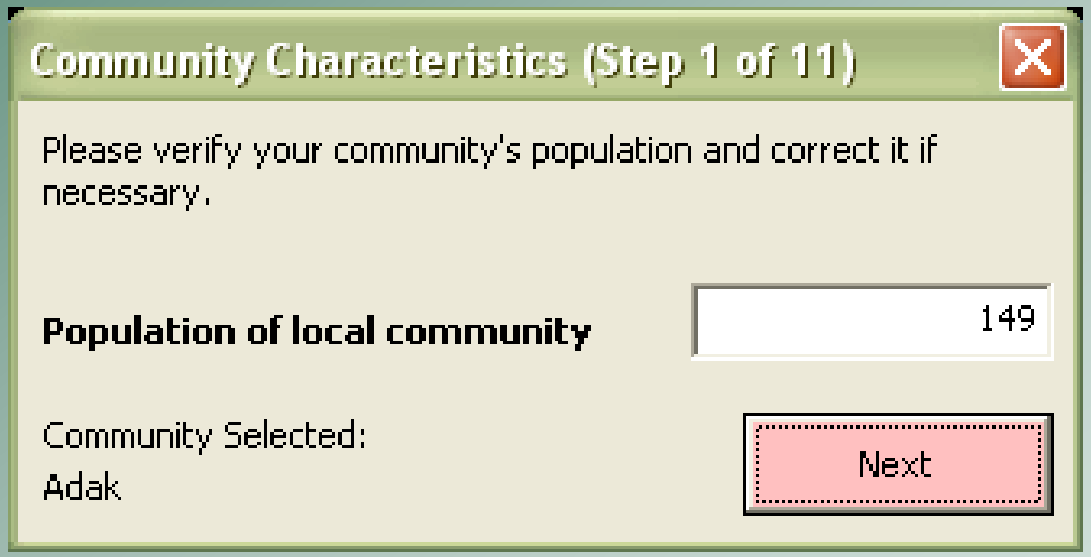
Community Population



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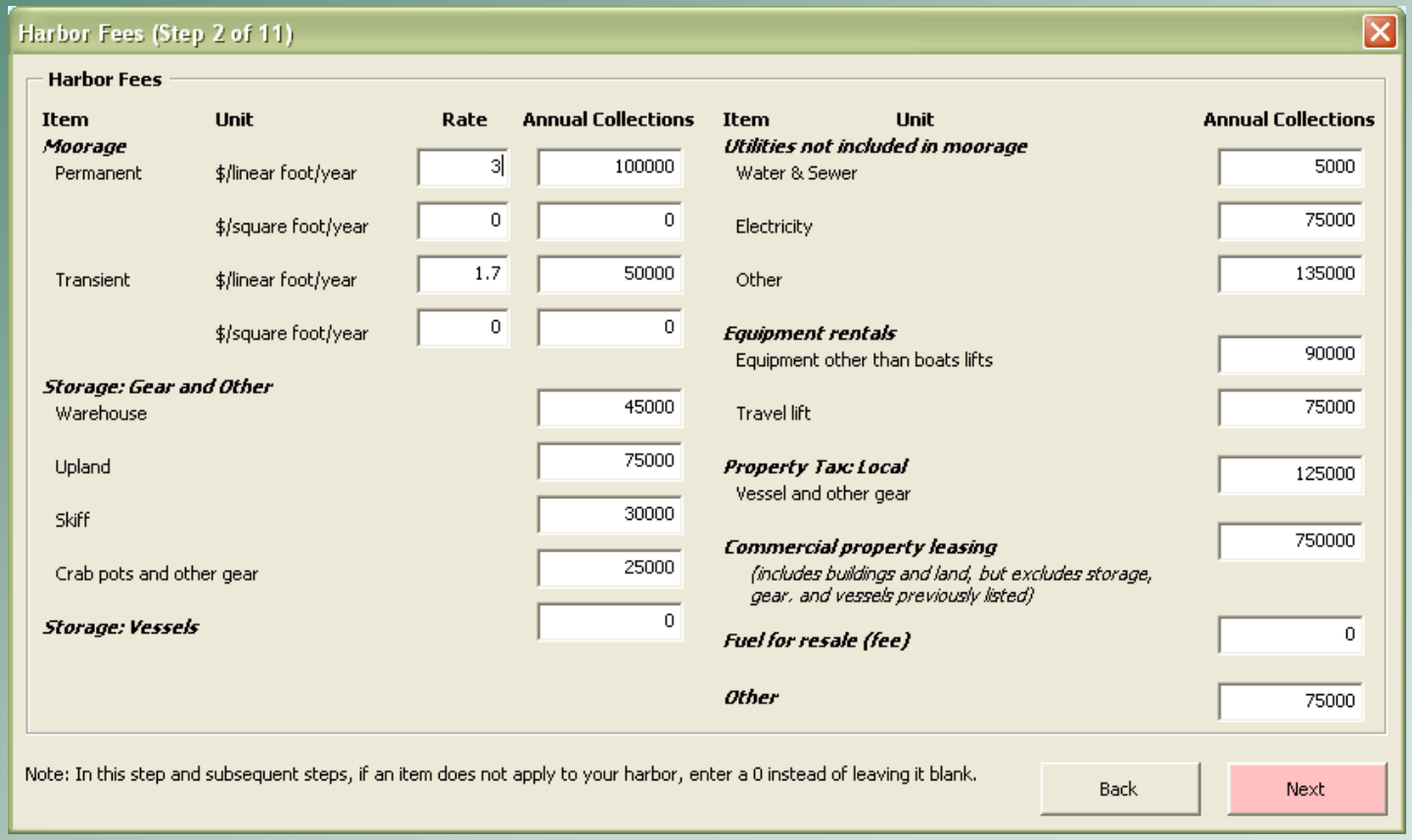
Harbor Fees



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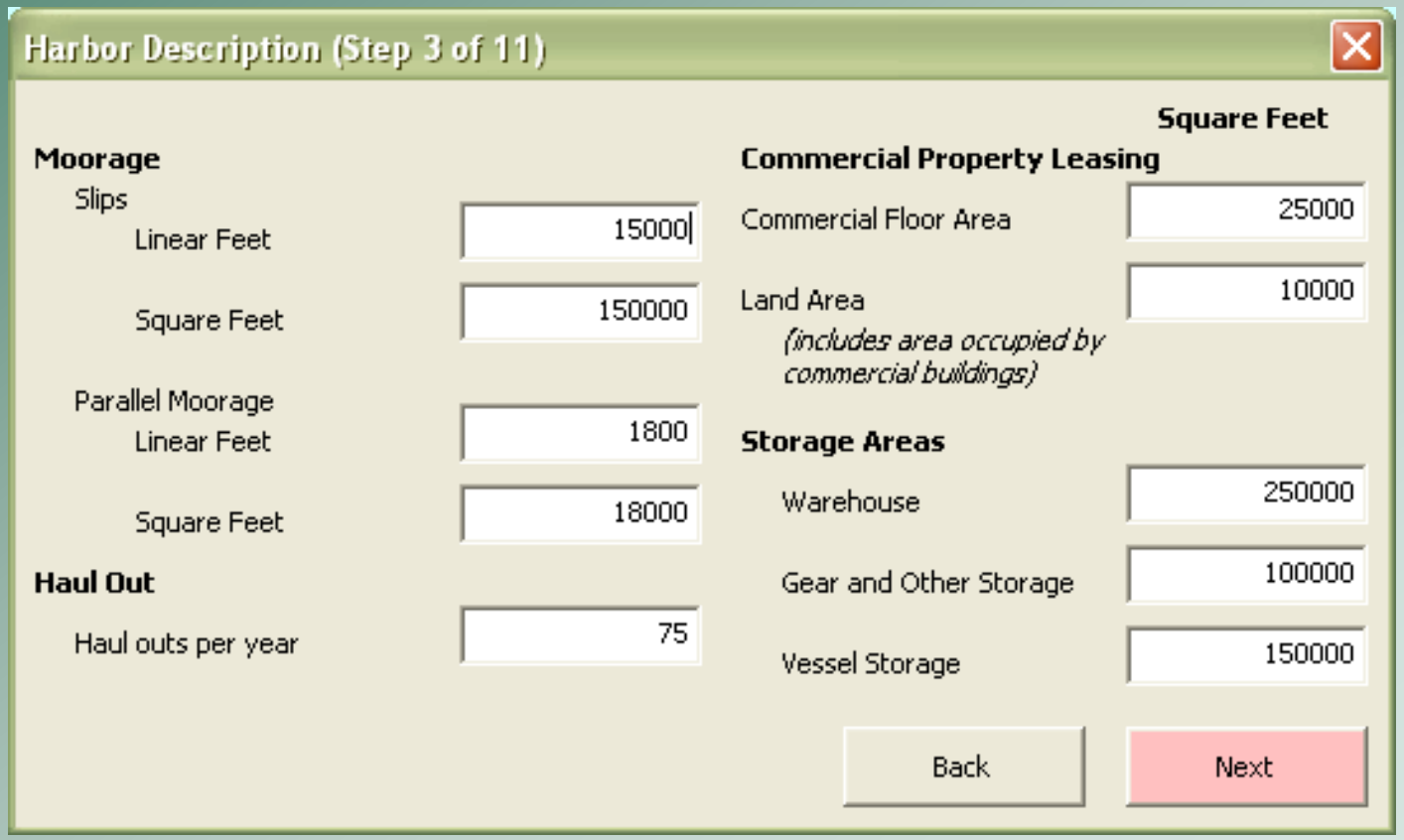
Harbor Description



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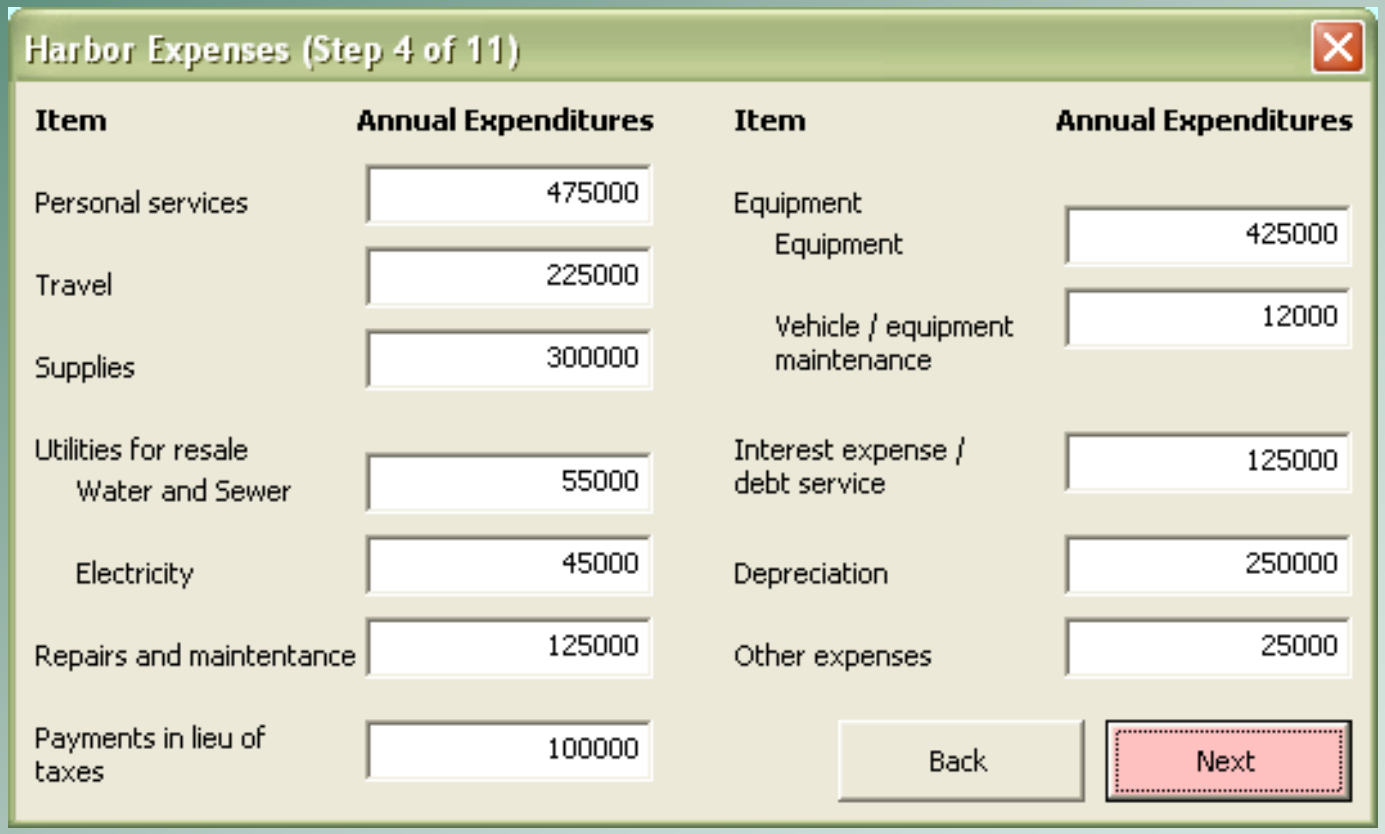
Harbor Expenses



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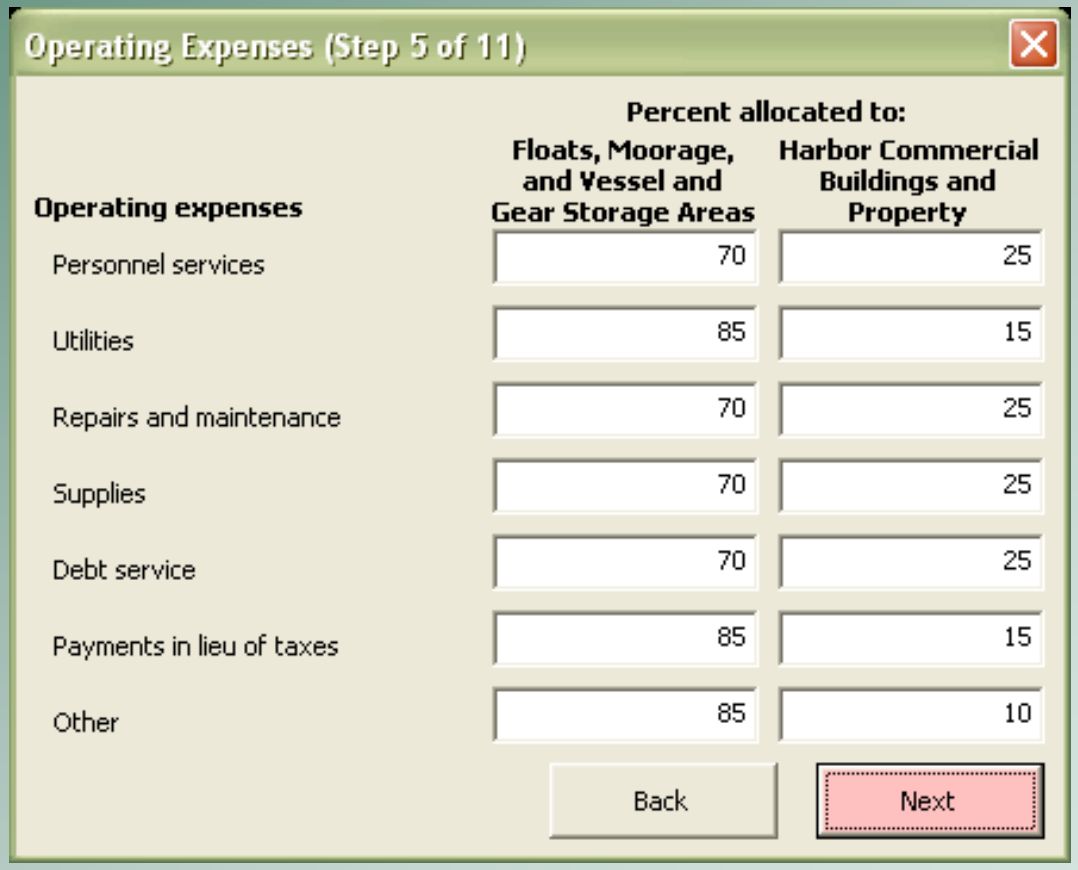
Operating Expenses



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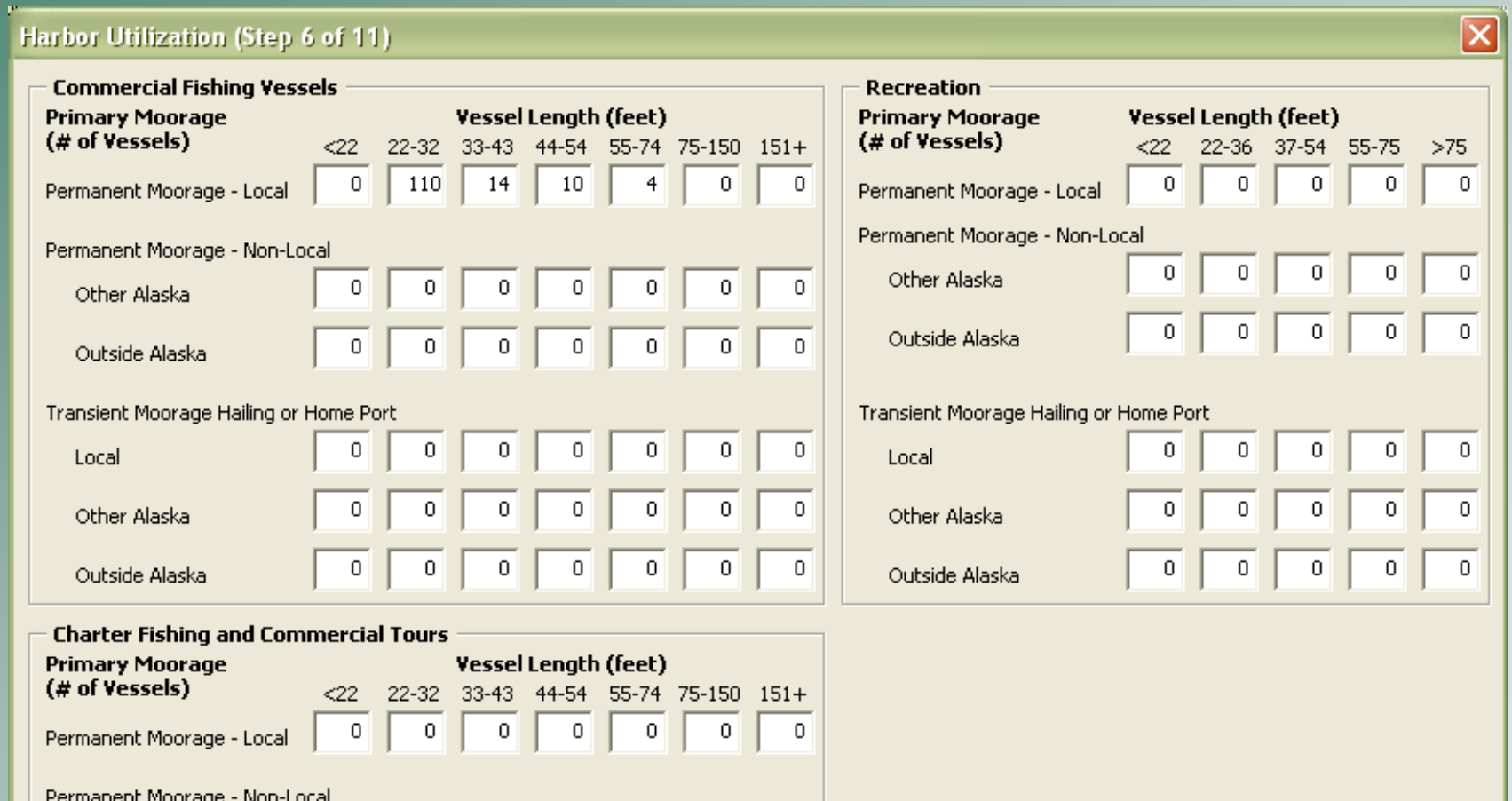
Harbor Utilization



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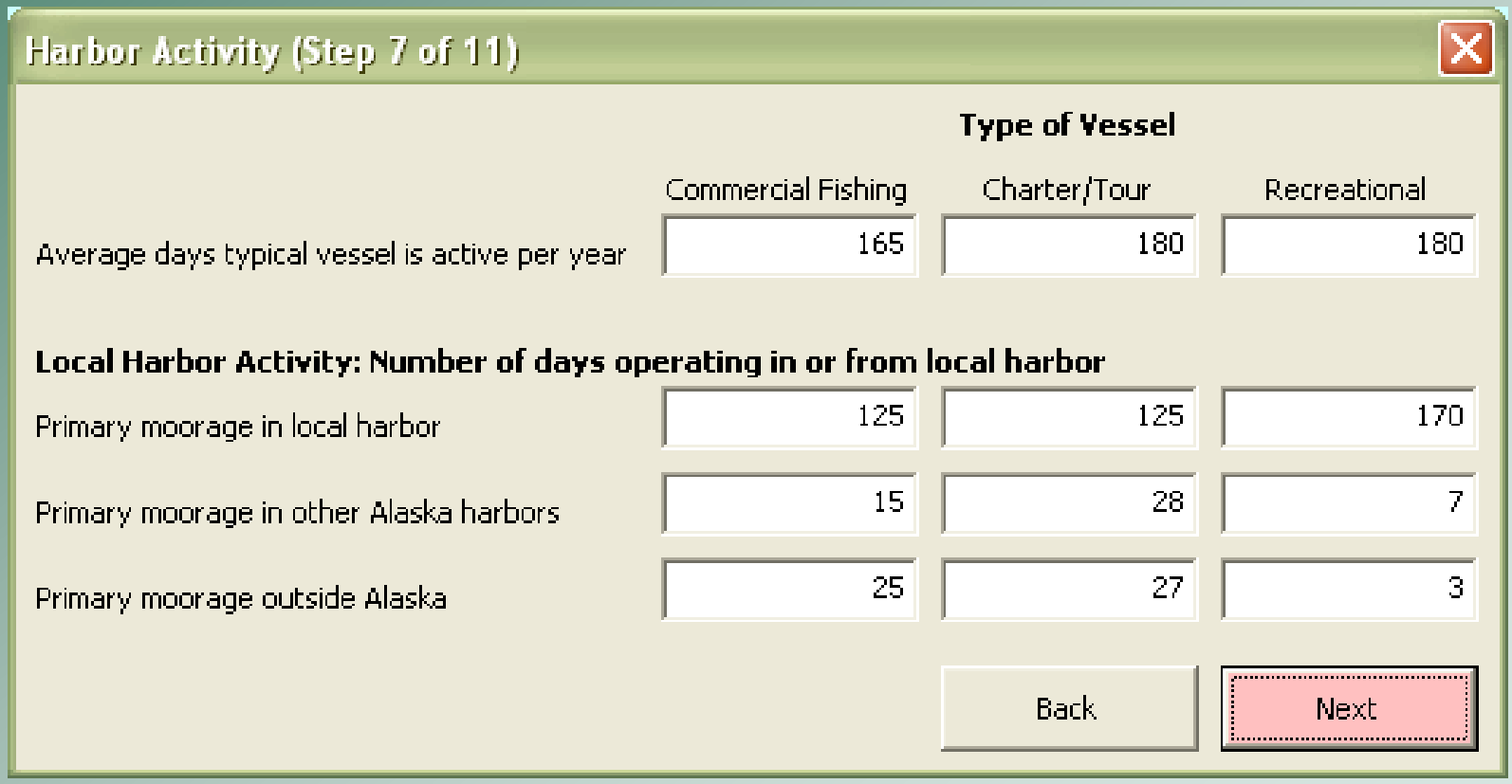
Harbor Activity



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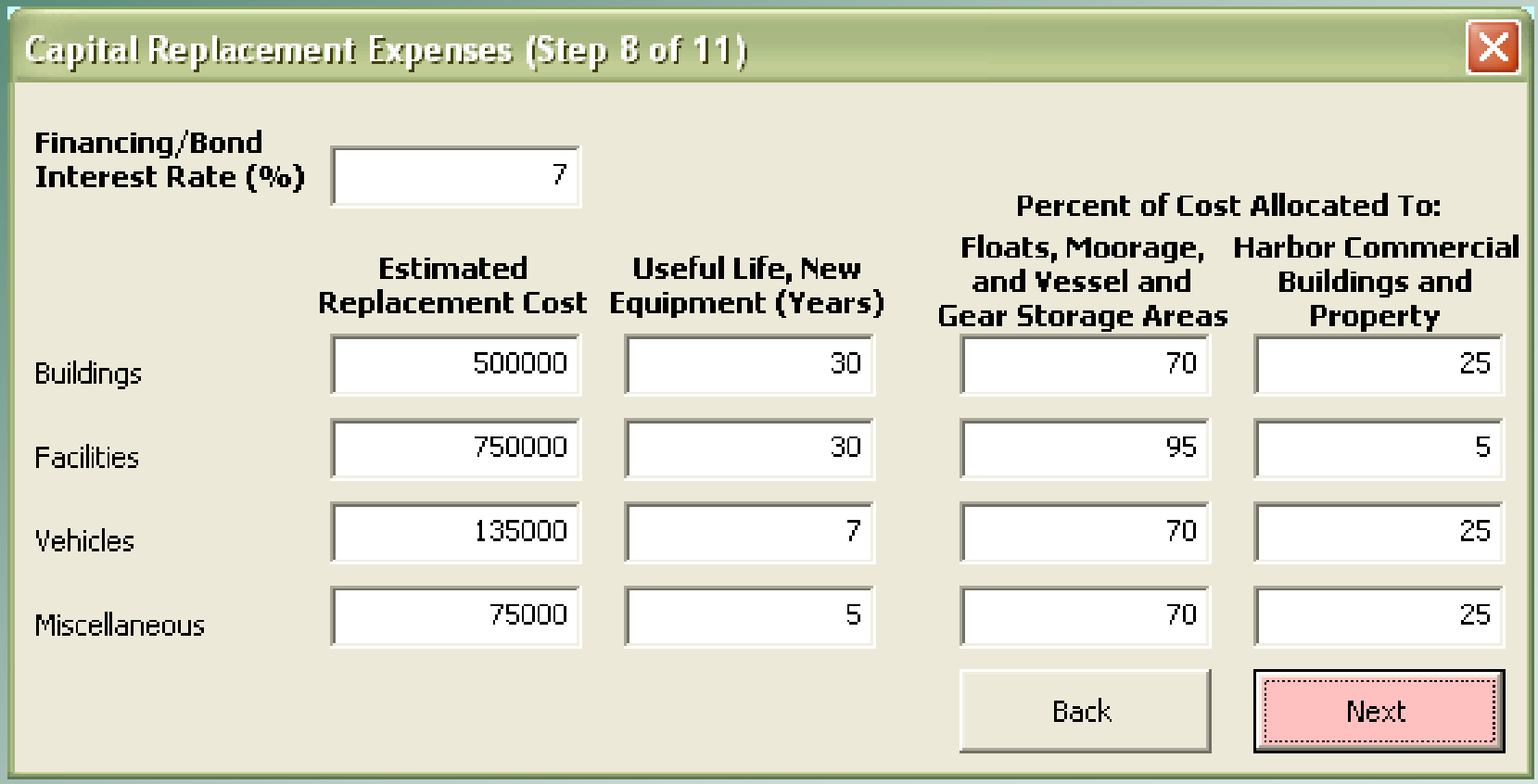
Capital Replacement Expenses



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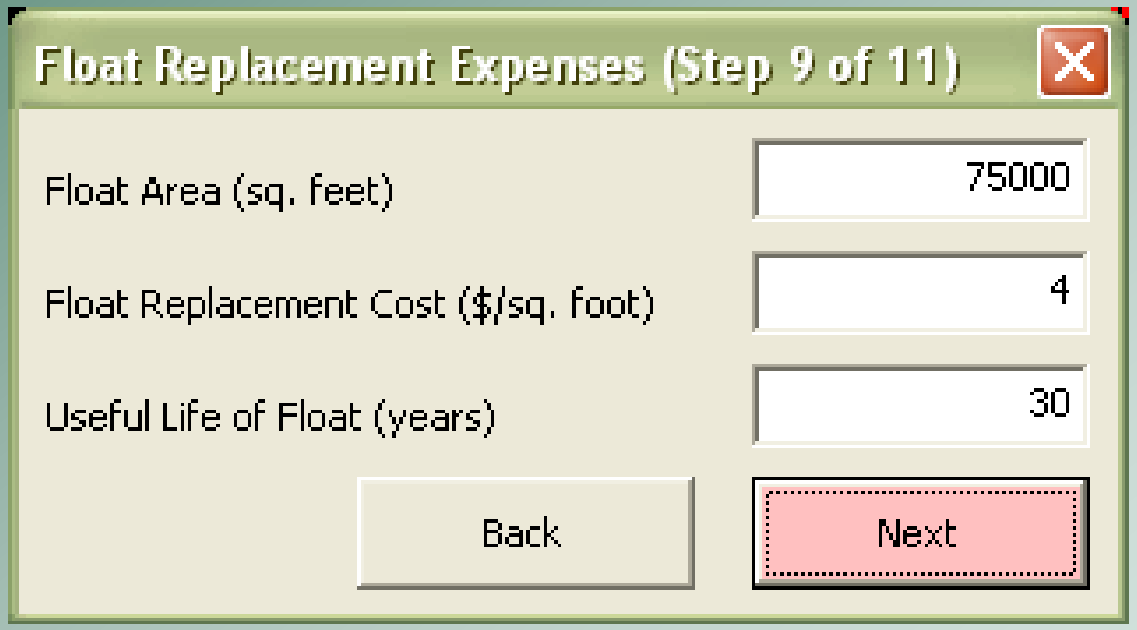
Float Replacement Expenses



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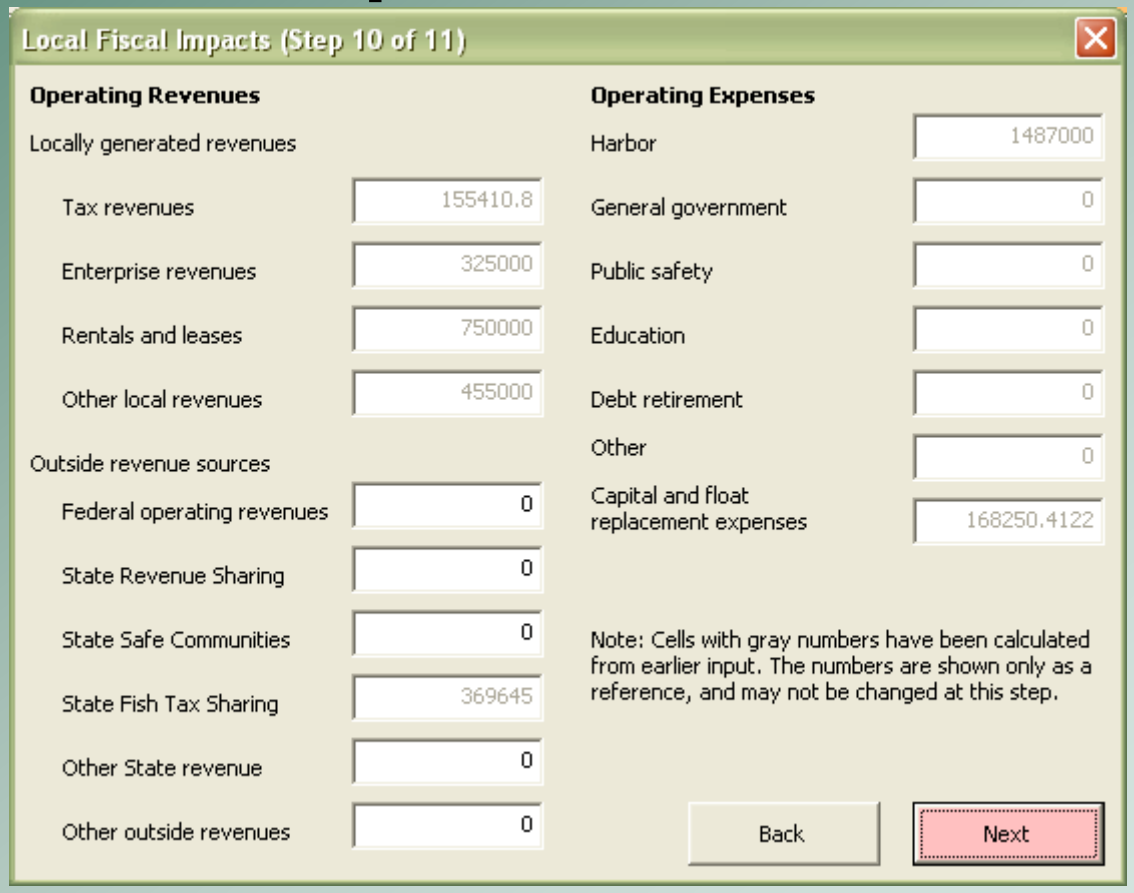
Local Fiscal Impacts



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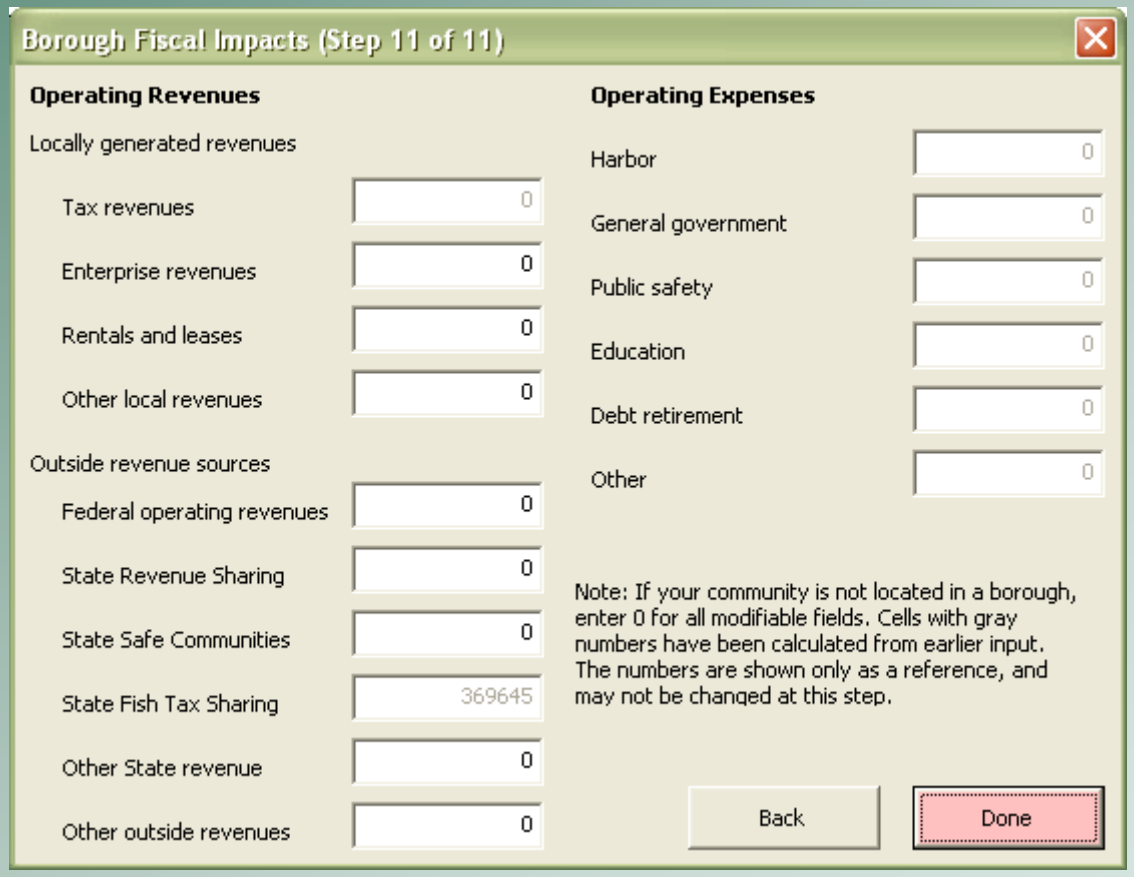
Borough Fiscal Impacts



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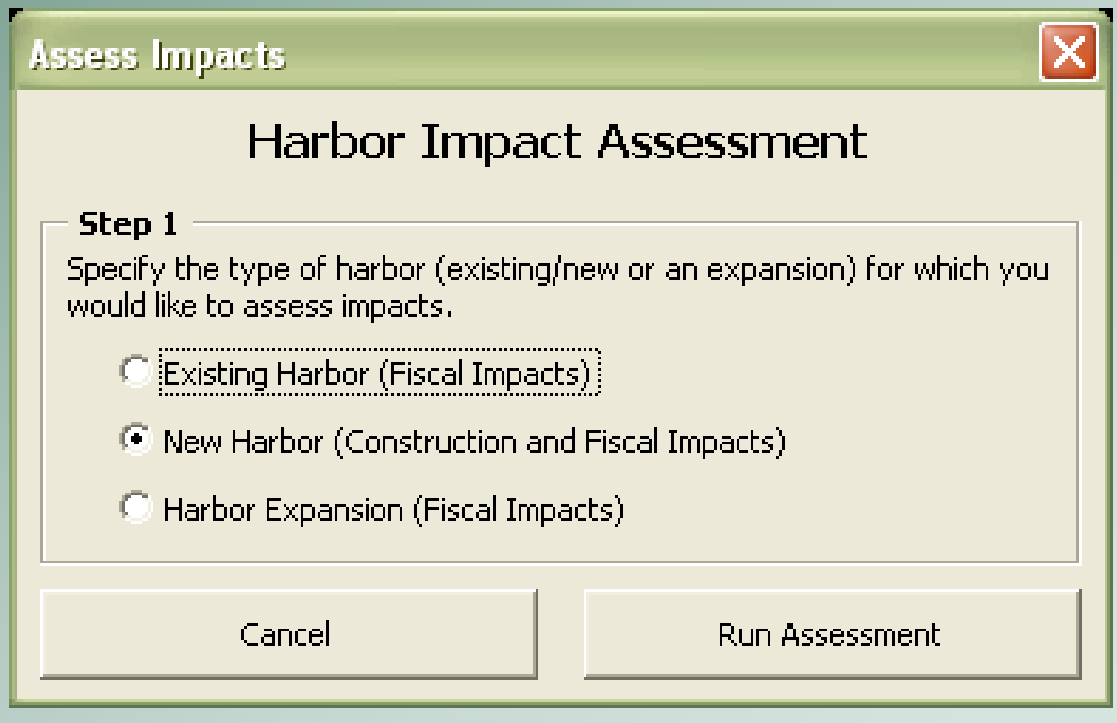
- **Once you've entered that information, you can estimate impacts:**



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- **Output from the model:**

HARBOR ECONOMIC IMPACT MODEL
SUMMARY REPORT FOR SEWARD SMALL BOAT HARBOR
CONSTRUCTION AND FISCAL IMPACTS OF NEW HARBOR
October 18, 2004

Operational Impacts	State	Borough / Census Area	Local
Total Sales (Direct, Indirect, Induced)	$14,678,839	$12,391,320	$11,369,479
Employment (Direct, Indirect, Induced)	172	143	121
Payments to Labor (Direct, Indirect, Induced)	$4,026,100	$3,424,000	$3,154,200

Harbor Revenues (Direct)	
Moorage	$150,000
Storage gear and vessels	$175,000
Utilities	$215,000
Haulout and equipment rental	$165,000
Business property leasing	$750,000
Other	$75,000
Total	$1,530,000
Harbor Expenses	
Personnel services	$451,000
Utilities	$100,000
Repairs and maintenance	$130,000
Supplies	$285,000
Debt service	$119,000
Payments in lieu of taxes	$100,000
Annualized float replacement costs	$24,000
Annualized other capital replacement costs	$140,000
Other operating expenses	$238,000
Total	$1,036,000

	Borough / Census Area	Local
Government Revenues		
Harbor Revenues	$0	$325,000
Other government revenues	$841,722	$1,730,071
Total operating revenues	$841,722	$2,055,071
Government Expenditures		
Harbor expenditures	$0	$1,487,000
Other govnerment expenditures	$153,144	$485,676
Total operating expenditures	$153,144	$1,972,676

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- **Economic Impacts:**

Operational Impacts	State	Borough / Census Area	Local
Total Sales (Direct, Indirect, Induced)	$14,678,839	$12,391,320	$11,369,479
Employment (Direct, Indirect, Induced)	172	143	121
Payments to Labor (Direct, Indirect, Induced)	$4,026,100	$3,424,000	$3,154,200

  - Total sales
  - Employment
  - Payments to Labor

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Harbor Revenues and Expenses:

Harbor Revenues (Direct)	
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Government Revenues and Expenses:

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- **A new harbor will also have construction impacts:**

Construction Impacts			
Estimated base construction cost for the Inner Harbor			$1,624,666
Estimated total cost of new harbor including upland facilities			$4,923,003
	State	**Borough / Census Area**	**Local**
Total Sales (Direct, Indirect, Induced)	$7,596,671	$6,670,733	$7,011,516
Employment (Direct, Indirect, Induced)	130	94	82
Payments to Labor (Direct, Indirect, Induced)	$4,500,373	$3,229,950	$2,965,046

  - Inner Harbor costs come from DOT's model

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- **This output shows an existing harbor.**
- **You can assess new harbors**
  - enter information as if harbor existed
  - output includes construction impacts
- **You can assess harbor expansions**
  - enter existing information
  - make changes for expansion
  - compare the results

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- **How to use the model:**
  - Decide what you want to model
  - Gather all the required information
    - Harbor finances
    - Estimated revenues and expenses
  - Enter information in the model
  - View output and adjust inputs as needed

Model Demonstration

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- Northern Economics, Inc. was asked to look at funding options for Seward's harbor expansion
- We developed revenue estimates based on City's calculations and harbor design
- We used the model to estimate increase in bed and sales tax revenues

Model Demonstration

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- **Why only bed and sales tax revenues?**
  - Represents money that flows to the City
  - Does not have a lag like other economic impacts
  - Could be used to pay debt service
- **Full economic impact would be useful for demonstrating need for funding**

Model Demonstration

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- **Revenue estimates**
  - Initial steps:
    - Determine changes
      - Potential increase in rates
      - Increase in slips and transient parallel moorage
    - Estimate revenues
      - With rate increase
      - With expansion
      - With rate increase and expansion

Model Demonstration

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- **Revenue estimates**
  - We estimated:
    - Relative changes in revenues:
      - 12% increase in rates
      - 27% increase in slips
      - 40% increase in transient moorage
    - Changes in revenues for each scenario:
      - Base revenues of $800,000
      - Rate increase – up 12% to $896,000
      - Harbor expansion – up 31% to $1,045,000
      - Rate increase and harbor expansion – up 46% to $1,171,000

Model Demonstration

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- **To estimate additional sales tax revenues, we use the model.**
- **We only make two changes:**
  - Vessels in various size categories
  - Revenues from moorage, utilities, etc.
  - Other variables are not important… unless we want to calculate economic impacts

Model Demonstration

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- **Ways to do this calculation:**
  - 1. Enter information for existing and expanded harbors, then compare differences
  - 2. Enter information for change in vessels only
- **Why and how?**
  - 1. Calculate all impacts – wide range of changes
  - 2. Calculate specific impact – bed and sales taxes – with knowledge of how model works

Model Demonstration

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- **Looking at bed and sales tax revenues under two situations:**
  - All commercial fishing
  - All recreation
- **Why these choices?**
  - Representative of mix of vessel types
  - Represents a good set of bounds
  - Results can be used to estimate revenues based on fleet composition

Model Demonstration

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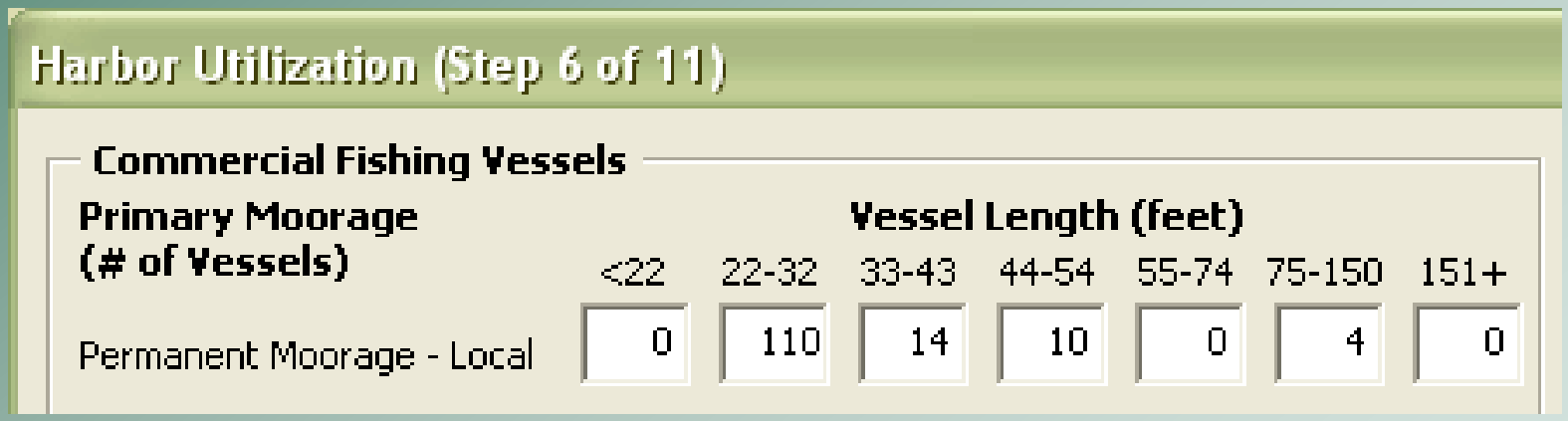
- **Commercial fishing vessel information – changes in fleet**



Model Demonstration

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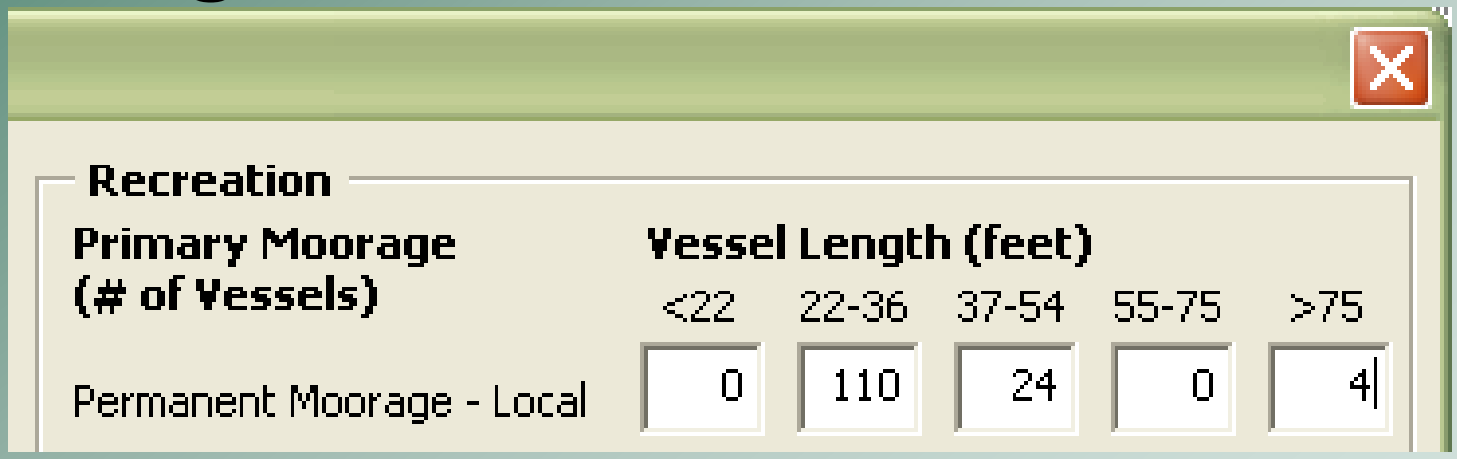
- **Recreational vessel information – changes in fleet**



Model Demonstration

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- **Output – need to go into underlying sheets for this detail…**
  - Commercial fishing

	V	W	X
39	Harbor related tax revenues		
40		Harbor related sales tax	$33,347
41		Harbor related bed tax	$4,601

  - Recreational

	V	W	X
39	Harbor related tax revenues		
40		Harbor related sales tax	$10,202
41		Harbor related bed tax	$5,307

Model Demonstration

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- **Adding these numbers:**
  - Commercial Fishing – $37,948
  - Recreation – $15,509

Model Demonstration

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- This example only looked at slips
- Transient parallel moorage handled separately

Model Demonstration

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- **Findings:**
  - Rate increase and/or harbor expansion provide funds to cover debt service
  - Bed and sales taxes provide additional revenues for use in debt service or operational needs.

Model Demonstration

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- **What could we get from a full use of the model:**
  - Construction impacts from expansion
  - Local and regional estimates of
    - Total fees, spending, etc.
    - Economic impacts

Potential Future Improvements

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- **Looking forward to future uses and enhancements**
- **Several changes would improve it:**
  - Under the hood changes
  - Interface changes
  - New features

Potential Future Improvements

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- **Under the Hood Changes:**
  - Reorganize the underlying spreadsheets
  - Expand coverage to harbors outside of Southcentral Alaska
  - Expand customization for communities

Potential Future Improvements

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- **Interface changes**
  - Better Microsoft Excel integration, e.g. exiting
  - Better handling of saved information, e.g. location and name

Potential Future Improvements

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- **New features**
  - Predictive changes, e.g. revenues and other numbers change with harbor changes
  - Handle impacts of changes internally, e.g. no manual calculations of expansion impacts

Where to Learn More

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- **At present, the model and manual are available from Alaska DOT&PF**
- **www.harbormodel.info**
  - Basic website at this time
  - Hope to add links to model files soon

Questions and Comments

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- **Any questions or comments?**

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