



# Tongass National Forest Spectrum Model

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# Overview

- Role of a forest management model
- Description of Spectrum
- Status of the Tongass Spectrum model
- Key Assumptions



# Why use a forest management model?

- Legal requirements (examples)
  - “Each alternative shall represent to the extent practicable the most cost efficient combination of management prescriptions examined that can meet the objectives established in the alternative.” CFR 219.12(f)(8)
  - “For the base sale schedules, the planned sale for any future decade shall be equal to, or greater than, the planned sale for the preceding decade...” CFR 219.16(a)(1)



# Why use a forest management model?

- Generates useful information
  - How to maintain standards and guidelines
  - Treatment types needed to achieve desired conditions
  - Possible roadblocks or management strategy revisions
  - Information that can be used for economic impact assessments



# What is Spectrum?

- Forest management model
  - “How should we manage our forest to meet our objectives?”
- Optimization model
  - Calculates the best answer to given assumptions
- Generates information required by law and other useful information
  - Sustainable timber volume, treatment intensity, cost and revenue projections, etc.



# What is Spectrum?

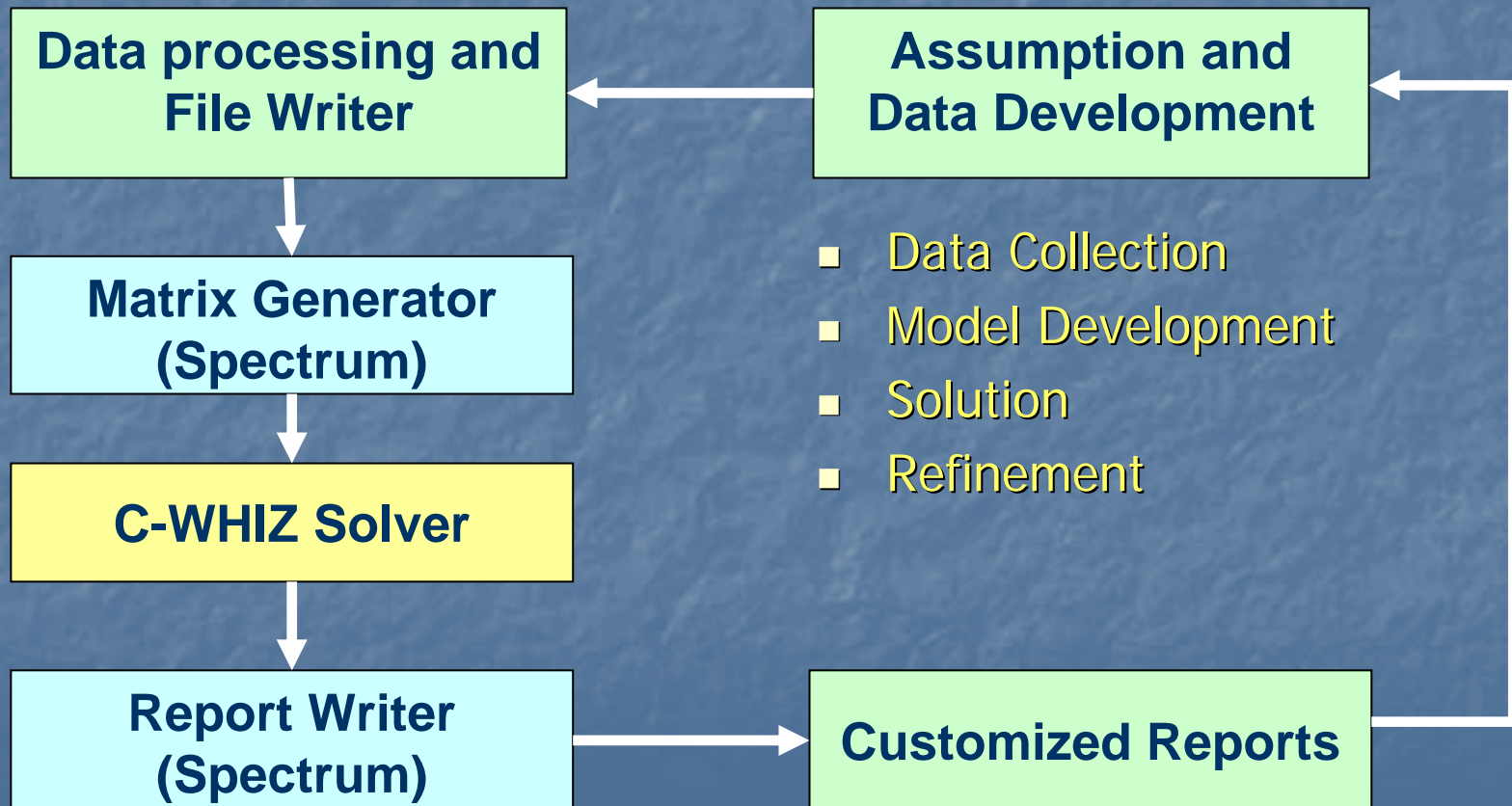
- **Spectrum** is a suite of programs designed to build and solve the forest management problem for National Forests
  - LP Terms: find the optimal value of the objective function subject to the given **constraints**
  - Example: find a management strategy that maximizes present net value over the next 160 years, making sure to **maintain a supply that meets timber demand**
- **Components:**
  - Assumption development and data collection
  - Data processing and input file writer
  - Matrix Generator
  - Solution software (C-Whiz – not part of Spectrum)
  - Report Writer



# Analysis process

## Analysis process

## Forest Level



■ Forest Developed



# Tongass Spectrum Model

- 1997 Alternative 11 FORPLAN model converted to Spectrum
  - Tested for accuracy of conversion
- Assumptions were updated based on current information available in 2006
- Models were built for seven alternatives in the 2006 plan amendment



# Updated Assumptions

1. Timber volume stratification (geographic zones) and associated yields
  - Young growth
  - Old growth
2. Timber harvest treatment options
3. Economic information
  - Timber values
  - Harvest costs
4. Regulation Class assignment and analysis
5. Appropriate constraint levels
  - Operability, timber demand, watershed, etc.



# Discussion