

# **Economic Implications of Renewed Timber Harvesting on a Federal Forest in Western Oregon**

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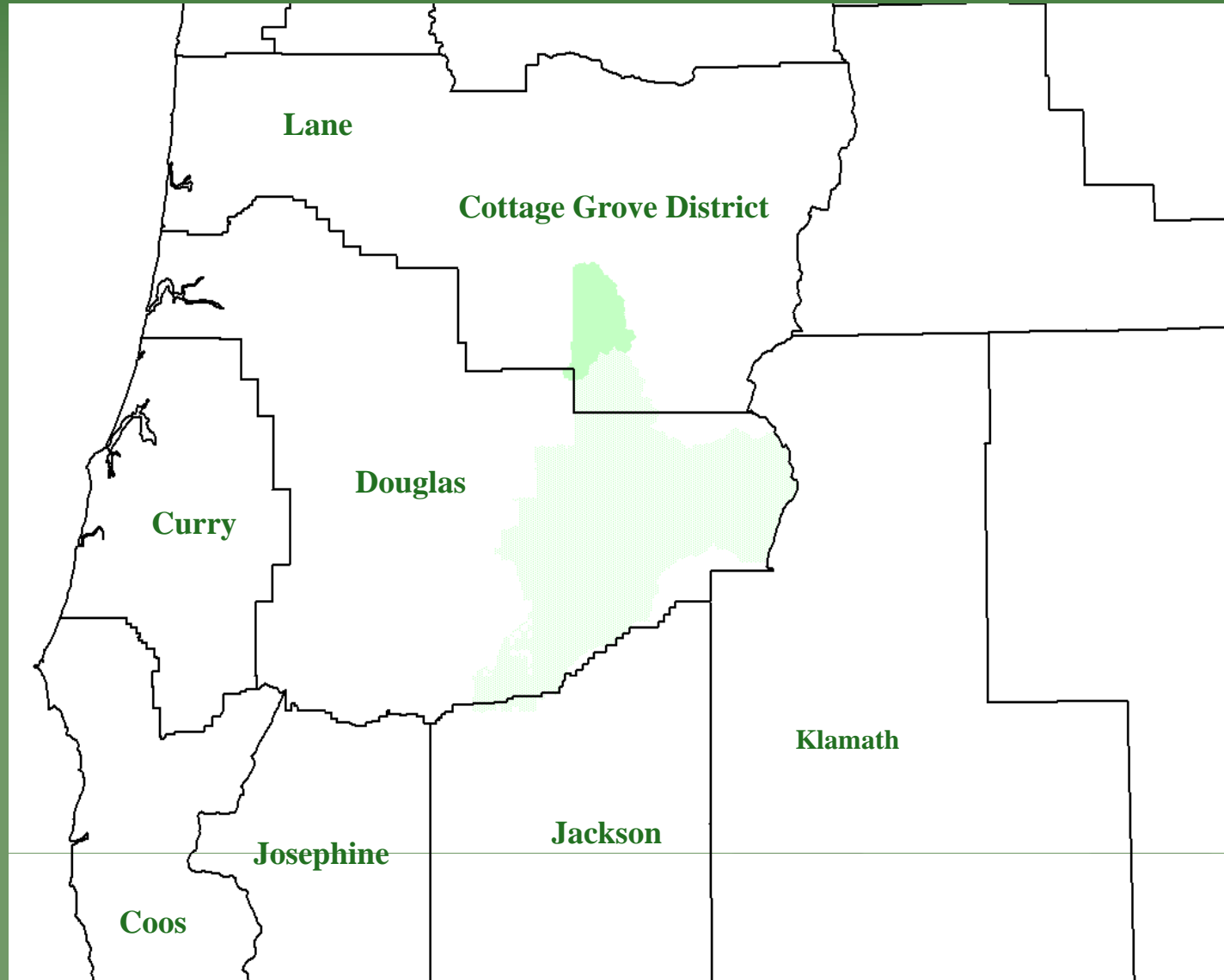
# Components of the Economic Analysis

- Harvest Scheduling Model
  - Linear Program, Model II Formulation
- Regional Timber Market Model
  - Dynamic spatial equilibrium, nonlinear programming model developed at OSU by Adams & Latta
- IMPLAN
  - Impacts on employment & incomes

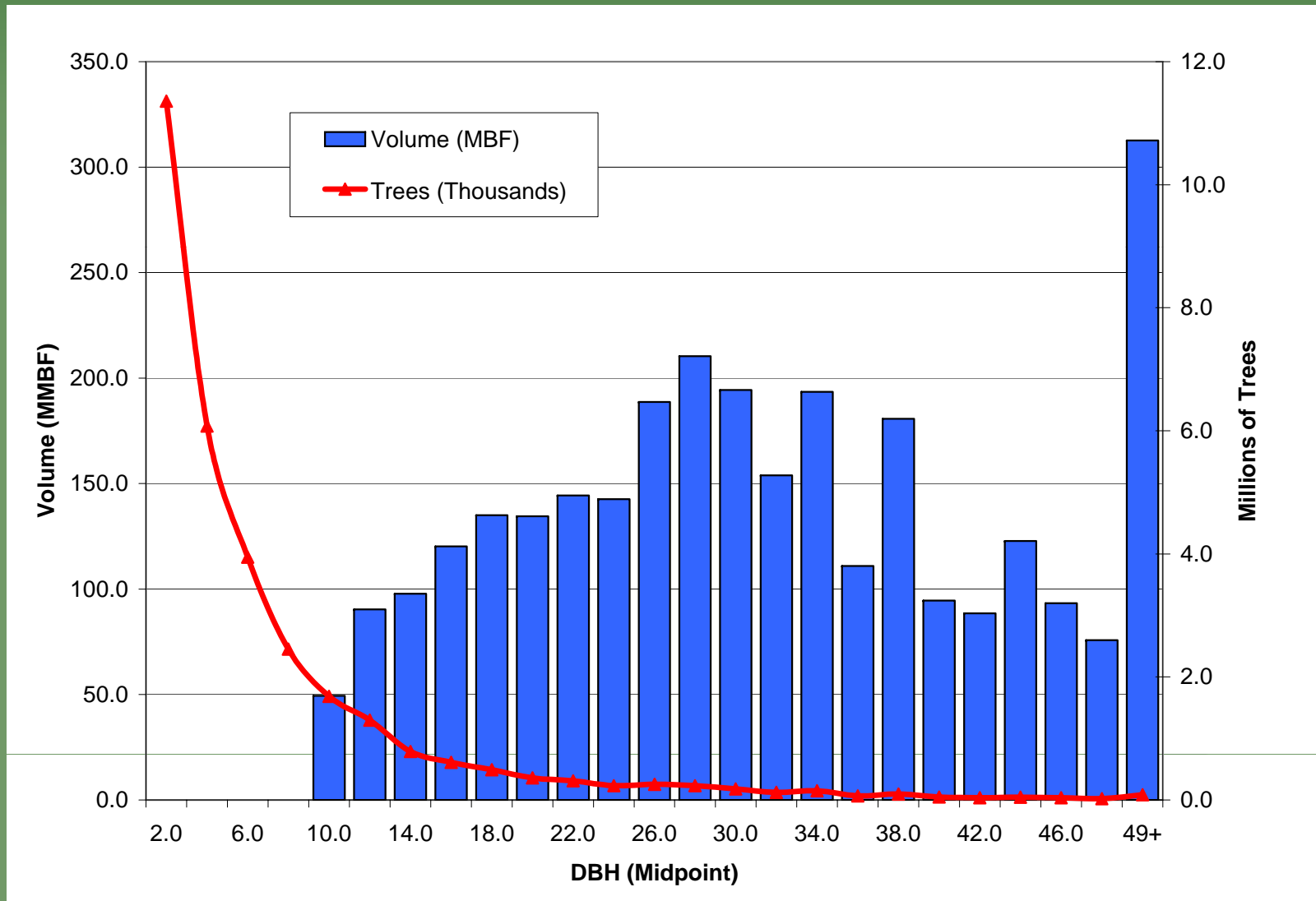
# Cottage Grove Ranger District

- Located in Lane County on the Umpqua National Forest
  - Total acres: 83,168
    - Matrix Lands: 70,071
    - Late Successional Reserve (LSR) acres: 9,313
    - Congressionally Reserved, Admin. Withdrawn: 3,784
  - O&C acres: 29,106
  - Current timber inventory: 2.9 BBF (based on FIA plot data collected from 1994-1997)

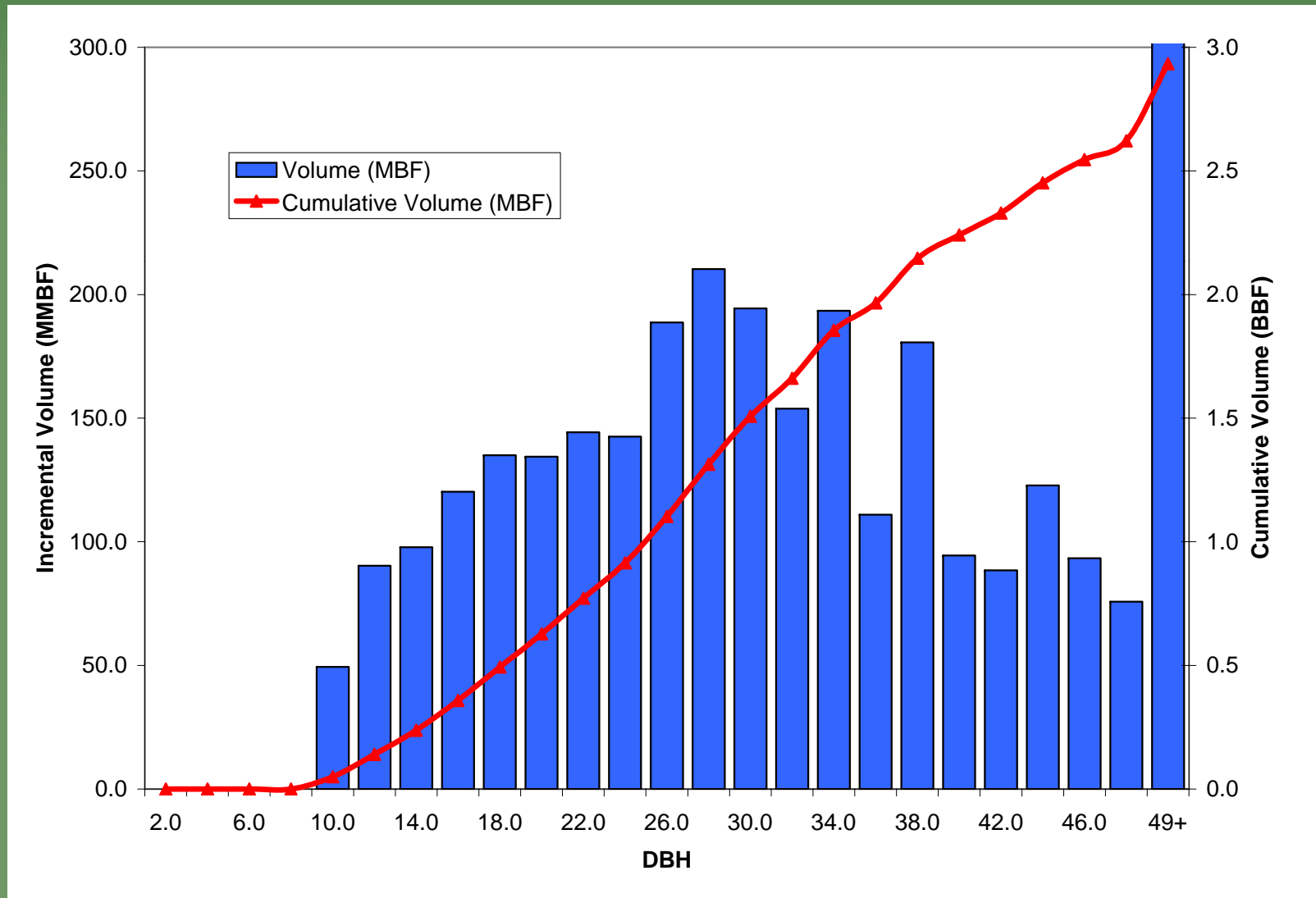
# Umpqua National forest & Cottage Grove District



# Cottage Grove District: Current Volume & Tree Count



# Incremental & Cumulative Volume



# Harvest Scheduling Model

# Model II Linear Program, 100-Year Horizon

- Objective: Maximize Net Revenue
- Constraints
  - Even flow of volume & revenue (+/- 10%)
  - Minimum harvest age of 40 & 80 years
  - AW lands, stream buffers, owl circles off limits to harvesting
  - Minimum average volume per acre:  
Matrix=20/LSR=30



# Model II Linear Program, 100-Year Horizon

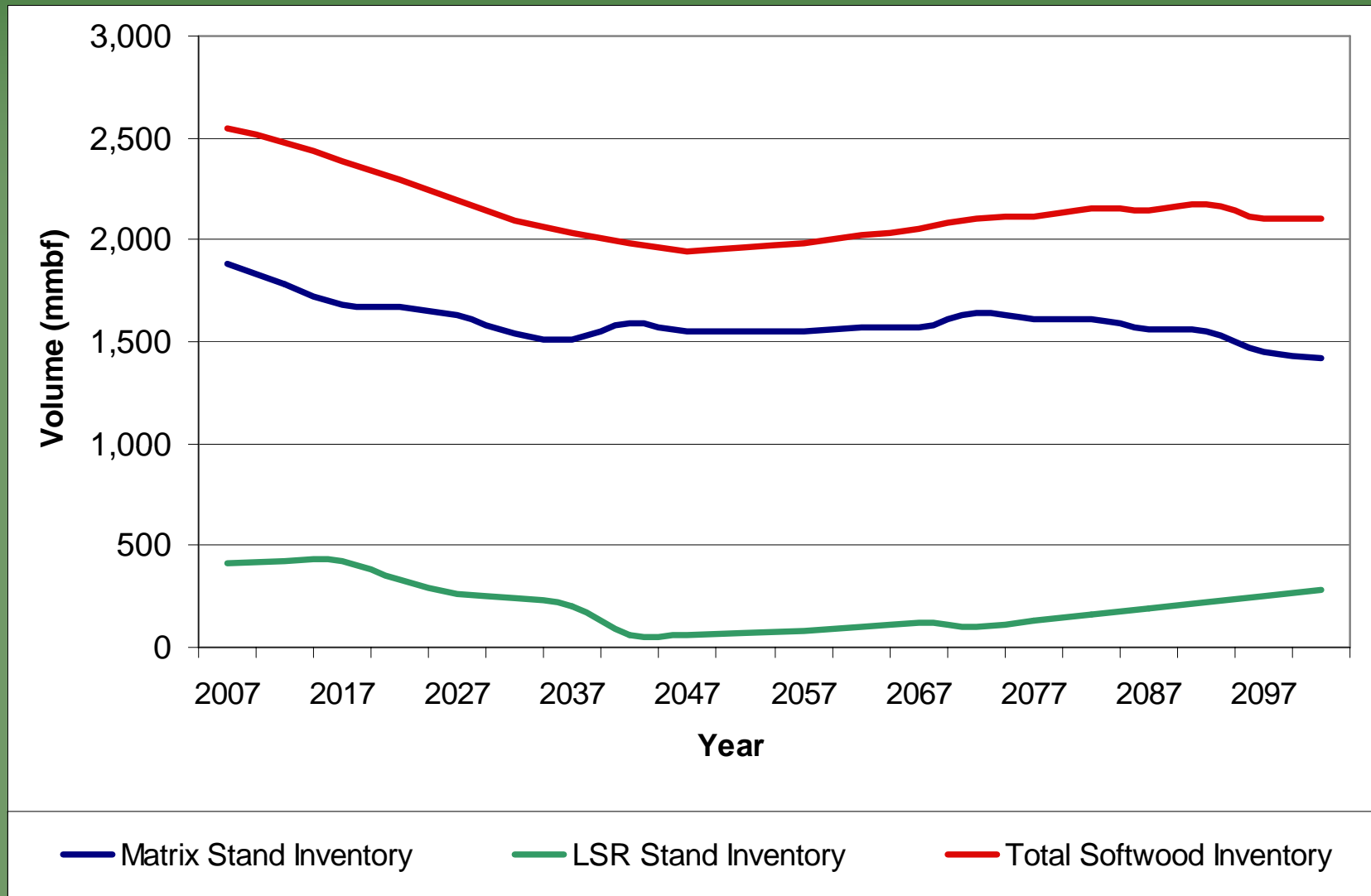
## ■ Assumptions

- 10% of volume lost to breakage & rot
- Zero growth in real log price or real harvesting costs
- Discount rate = 6%
- Softwood Sawlog prices vary from \$400 - \$625 / MBF
- Harvest costs average \$165/mbf, but vary by harvest method & volume per acre

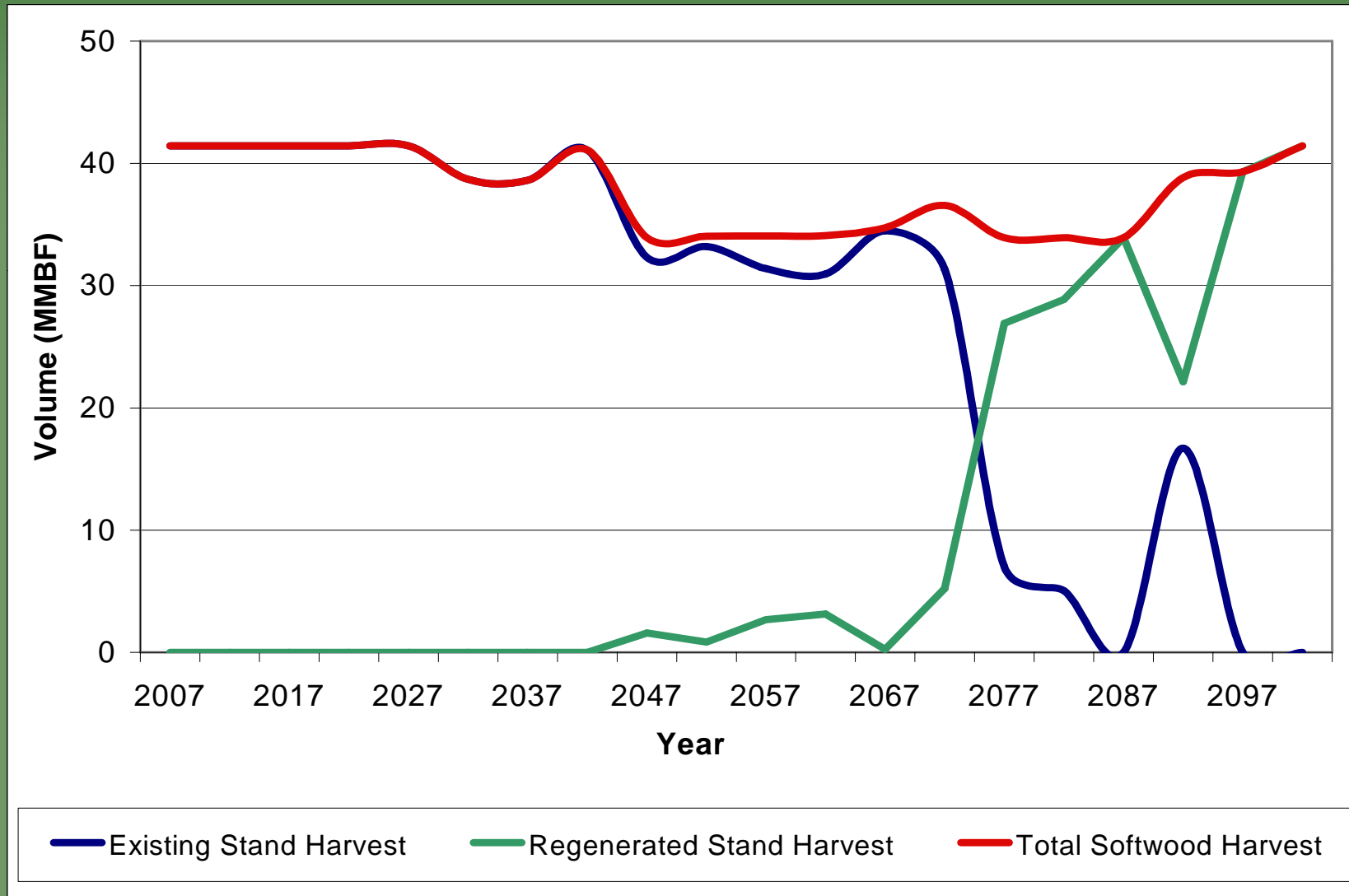
# Results

| Parameter                               | Baseline | 40-Year Minimum Harvest Age | 80-Year Minimum Harvest Age |
|---|----------|-----------------------------|-----------------------------|
| Avg. Annual Harvest (MMBF)              | 5        | 38                          | 37                          |
| Avg. Annual Net Rev. (Millions 2006 \$) | ???      | \$15.6                      | \$15.3                      |
| Avg. Per Acre Begin Inventory (MBF)     | 31       | 31                          | 31                          |
| Avg. Per Acre Ending Inventory (MBF)    | ???      | 25                          | 27                          |
| Total Forest Value (Millions \$)        | ???      | \$287.8                     | \$282.0                     |
| Per Acre Land value                     | ???      | \$3,625                     | \$3,553                     |

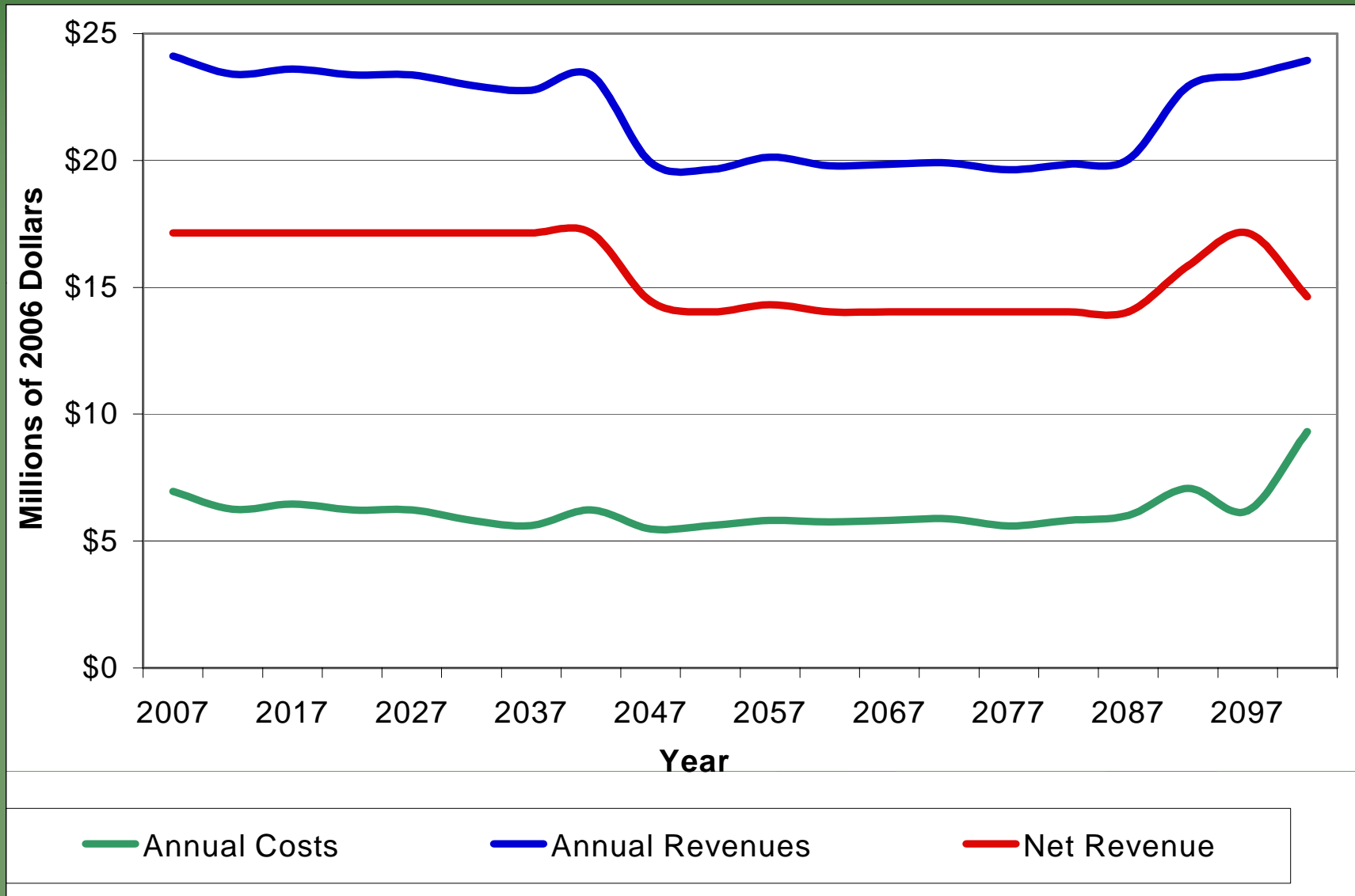
# 40-Year Minimum Harvest Age: Softwood Inventory



# 40-Year Minimum Harvest Age: Softwood Harvest Volume



# 40-Year Minimum Harvest Age: Annual Revenue & Cost



# Log Flow Model Results

# Impacts—Only Western Oregon Considered

## ■ Harvest impacts:

- Harvest impacts observed in all western Oregon counties
- Short-run decrease in private harvest

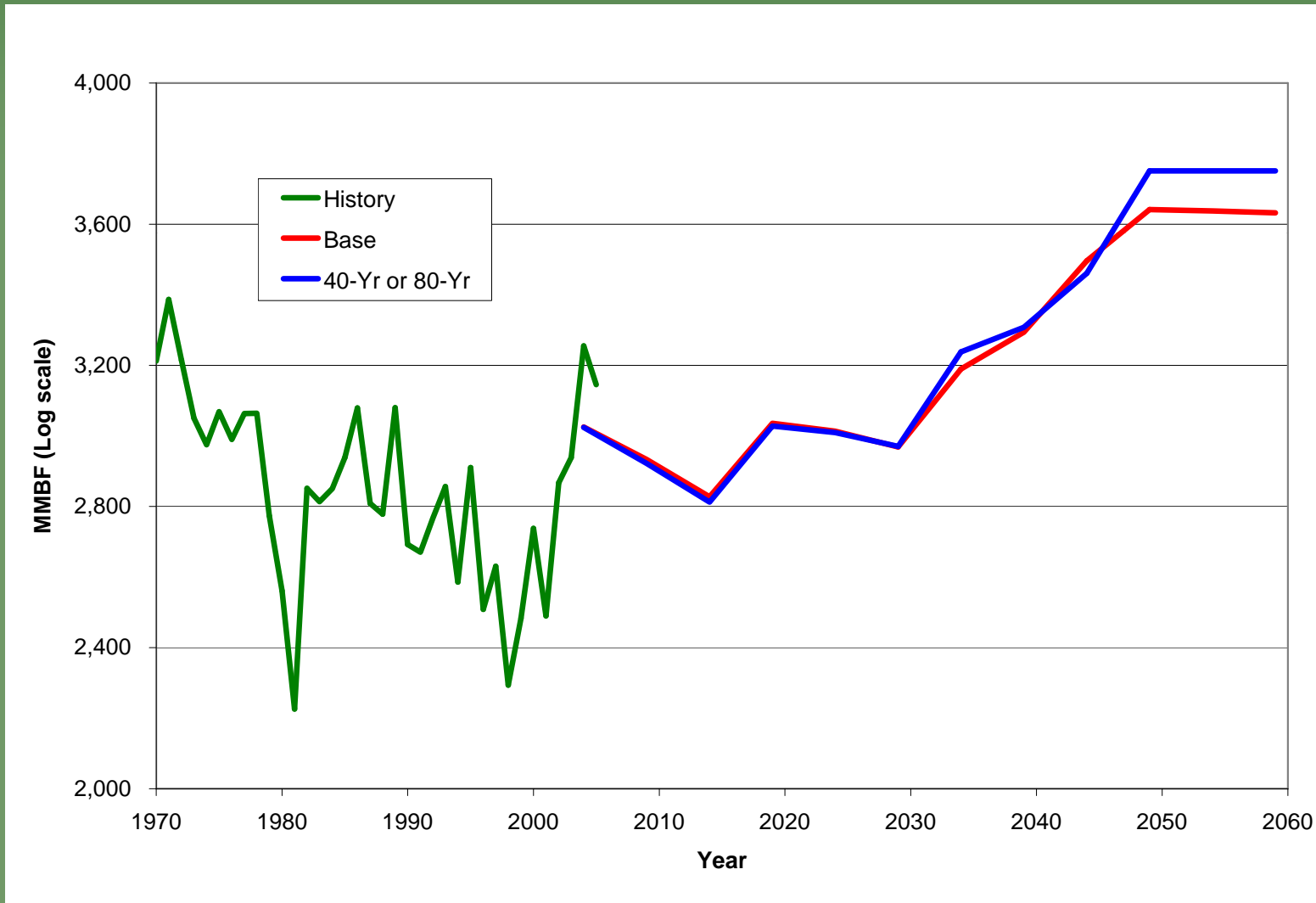
## ■ Sawmill Impacts:

- Short-run production increase greatest in Linn, Columbia, Coos, and Lane counties
- Long-run shift in sawmill capacity {Lane, Douglas, Clackamas, Yamhill, Columbia, and Linn counties}

## ■ Plywood Impacts:

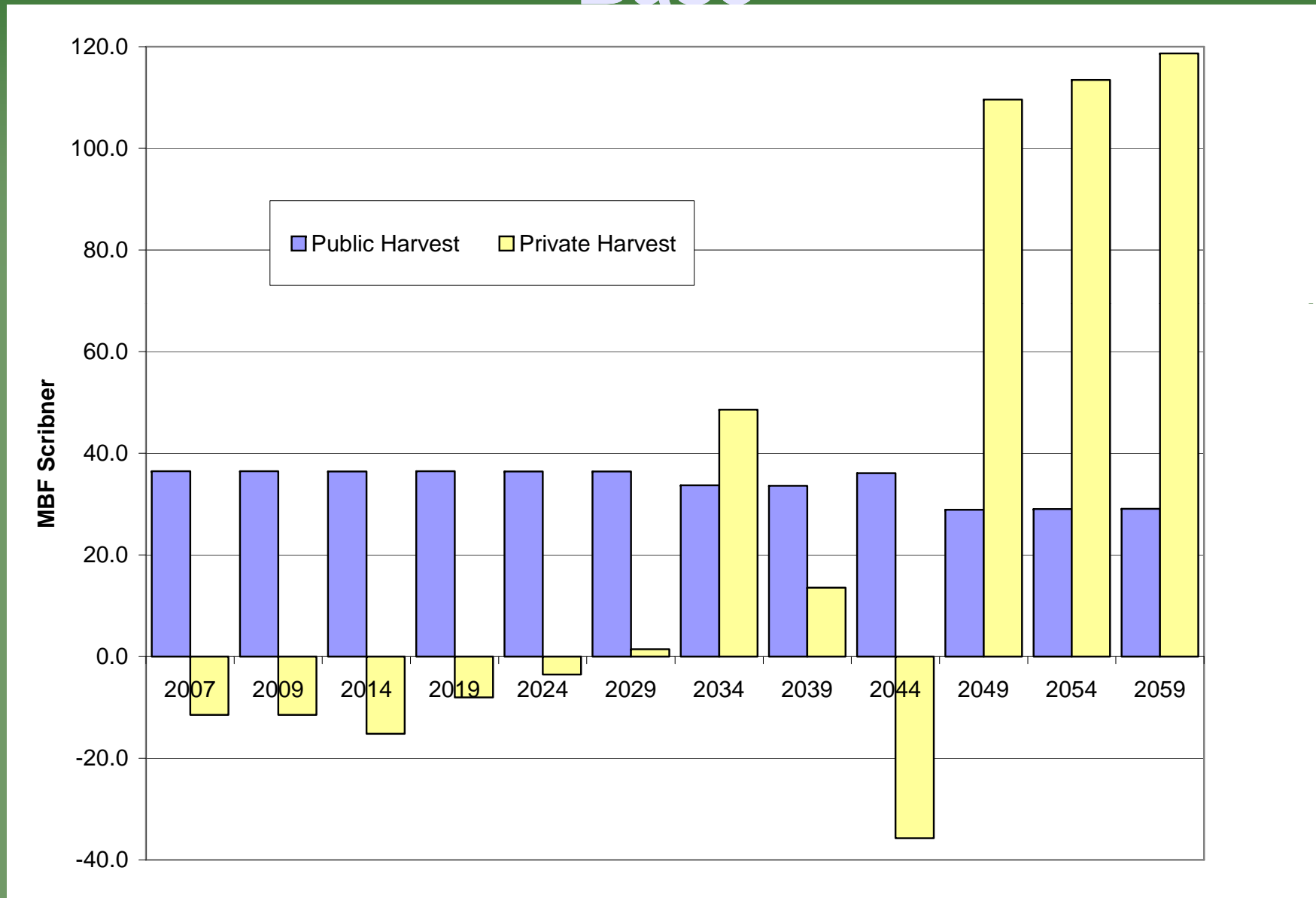
- Effectively no change in log consumption

# Private Harvest Projections

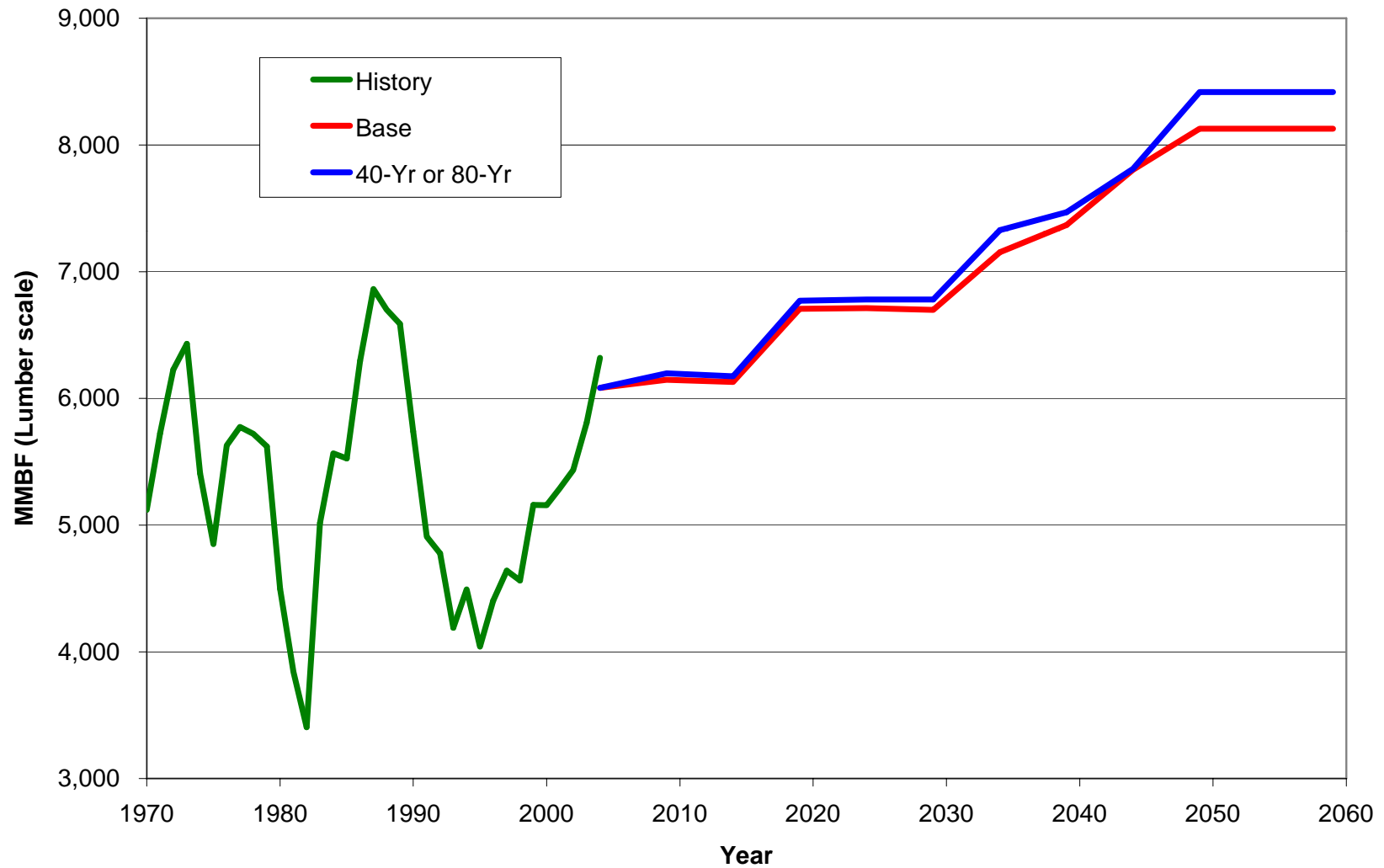




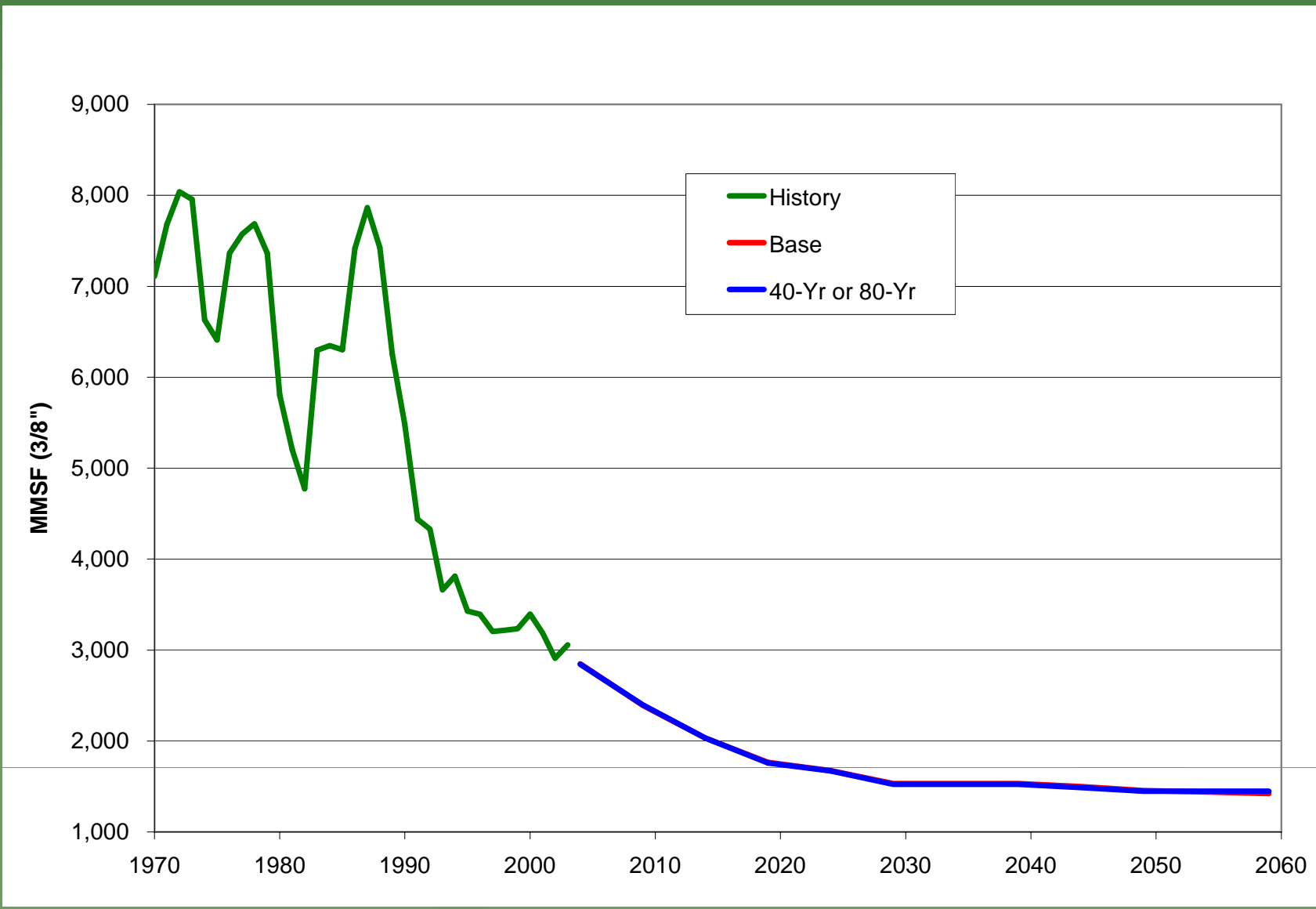
# Deviation of Harvest Levels from Base



# Lumber Production Projections



# Plywood Production Projections



# IMPLAN Results

# Logging Impacts

|                 | Direct Impacts | Indirect Impacts | Induced Impacts |
|-----------------|----------------|------------------|-----------------|
| Economic Output | \$16,000,000   | \$5,900,000      | \$4,400,000     |
| Personal Income | \$3,400,000    | \$2,000,000      | \$1,600,000     |
| Jobs            | 46             | 58               | 50              |

# Lumber Production—Value Added Impacts

|                    | Direct<br>Impacts | Indirect<br>Impacts | Induced<br>Impacts |
|--------------------|-------------------|---------------------|--------------------|
| Economic<br>Output | \$4,000,000       | \$2,400,000         | \$1,100,000        |
| Personal<br>Income | \$,770,000        | \$630,000           | \$430,000          |
| Jobs               | 12                | 13                  | 12                 |

# Total Impacts

|                 | Direct Impacts | Indirect Impacts | Induced Impacts |
|-----------------|----------------|------------------|-----------------|
| Economic Output | \$20,000,000   | \$8,400,000      | \$5,500,000     |
| Personal Income | \$4,181,000    | \$2,600,000      | \$2,100,000     |
| Jobs            | 59             | 70               | 62              |

# Conclusions



# Important Findings

- Small local increase in log production can have regional impacts
- When even-flow constraint is included, only slight difference in the annual volume and value of harvest of the forest under a 40-year or 80-year rotation
- Westside federal forests can produce a significant flow of logs and value under long-rotation management

# Important Findings (cont.)

- In the short-run, increased public harvest would be partially offset by lower private harvest
- Increase in local log supply would lead to increase in regional sawmill capacity
- Increase in harvest has no real impact on log consumption by plywood mills

# Important Findings (cont.)

- Economic impacts would accrue to entire region, but would be greatest in local area
- The net 25 MMBF in annual log harvest would result in direct employment impacts of 46 logging and 12 sawmill jobs; 190 total jobs\*
- Approximately \$34 million in annual economic value\*

\*Estimates of employment and economic value are for short-run only