

Projecting Private Forest Investment and Forest Carbon with the Forest and Agricultural Sector Optimization Model – Green House Gas

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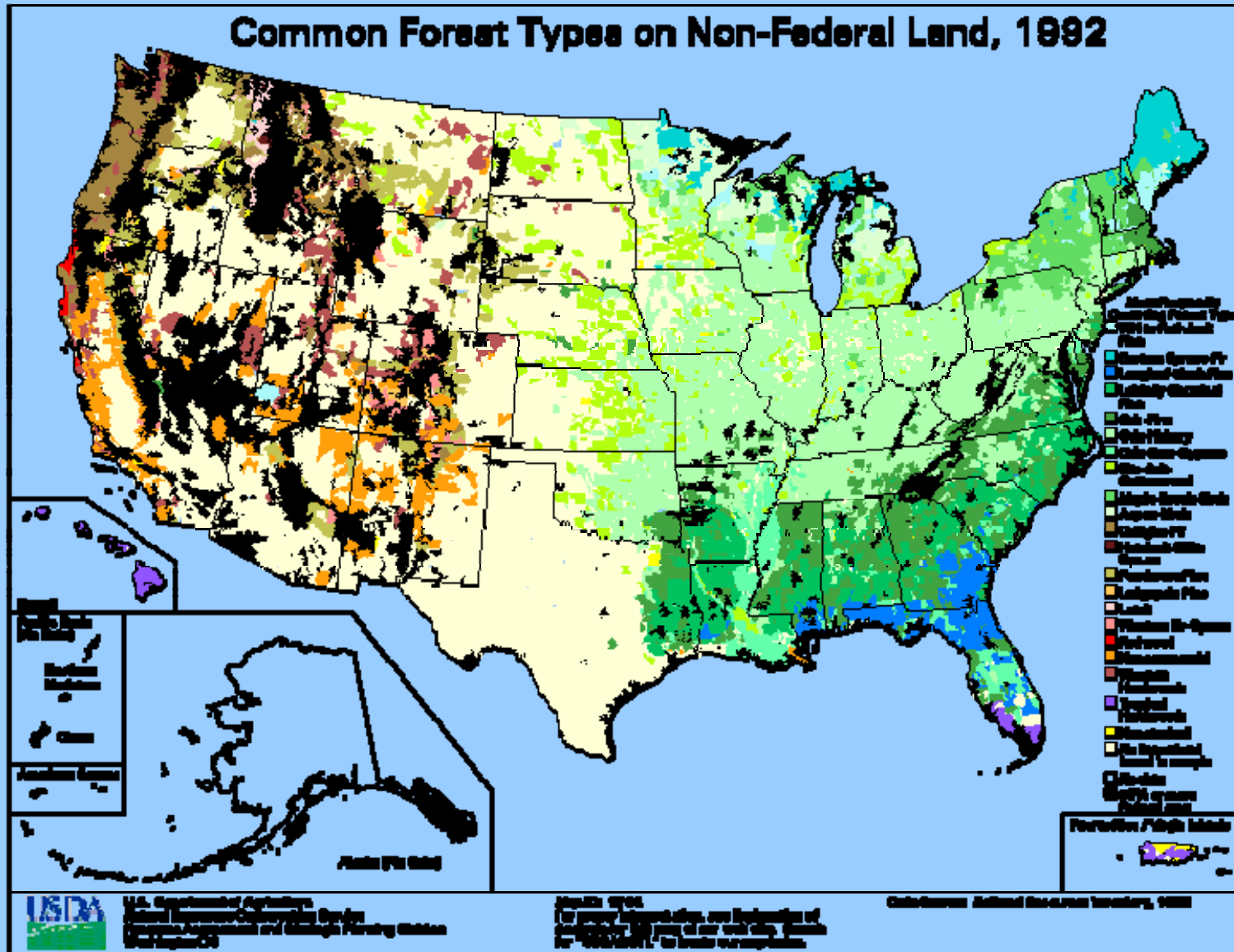


Timberland and Carbon Sequestration

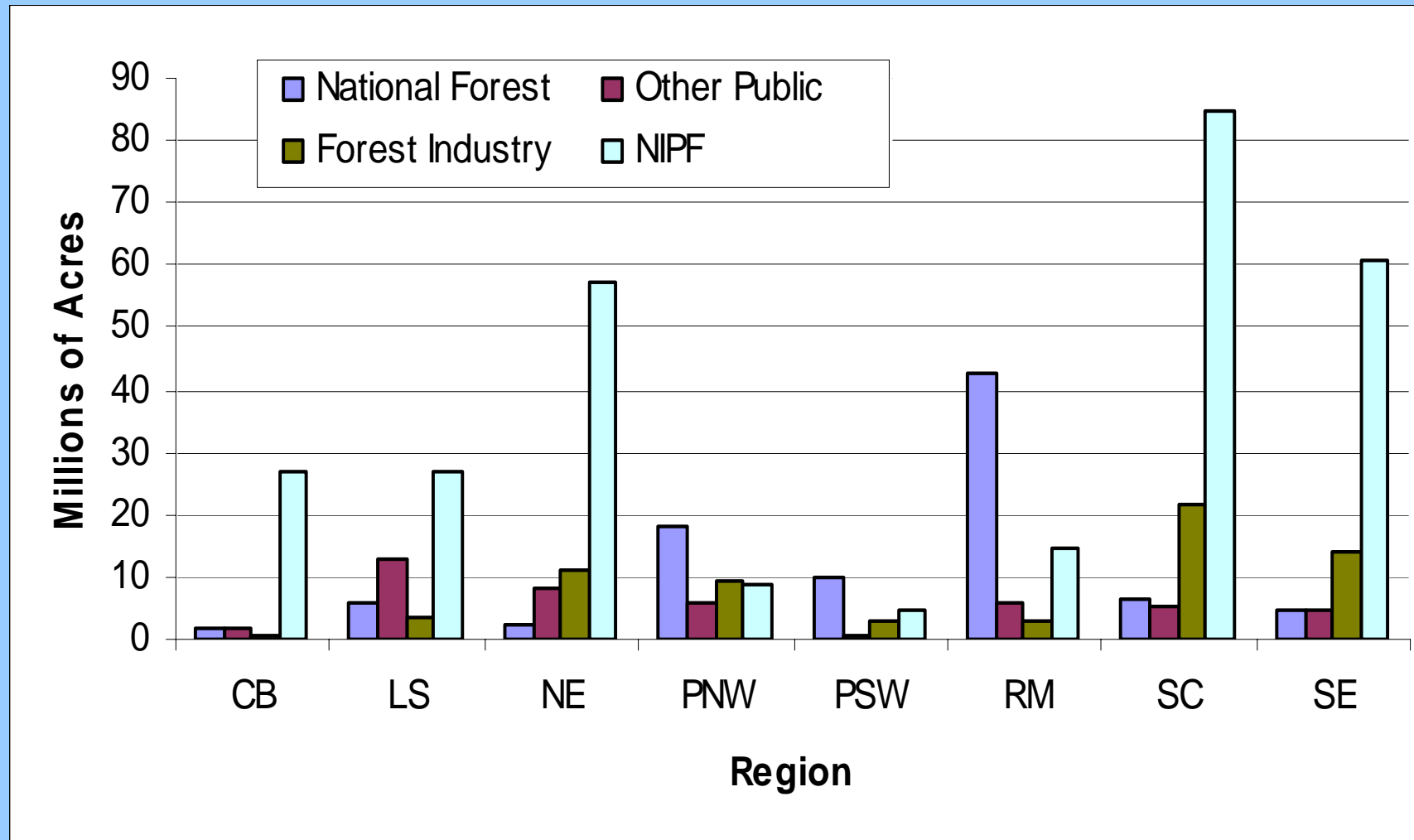
- Five factors that drive economics of storing carbon in forests for extended periods (Stavins and Richards 2005)
 - Management practices for various forest types and regions
 - Opportunity cost of land and agricultural commodity prices
 - Disposition of forest products
 - Policy scenarios
 - Parameters such as interest rate



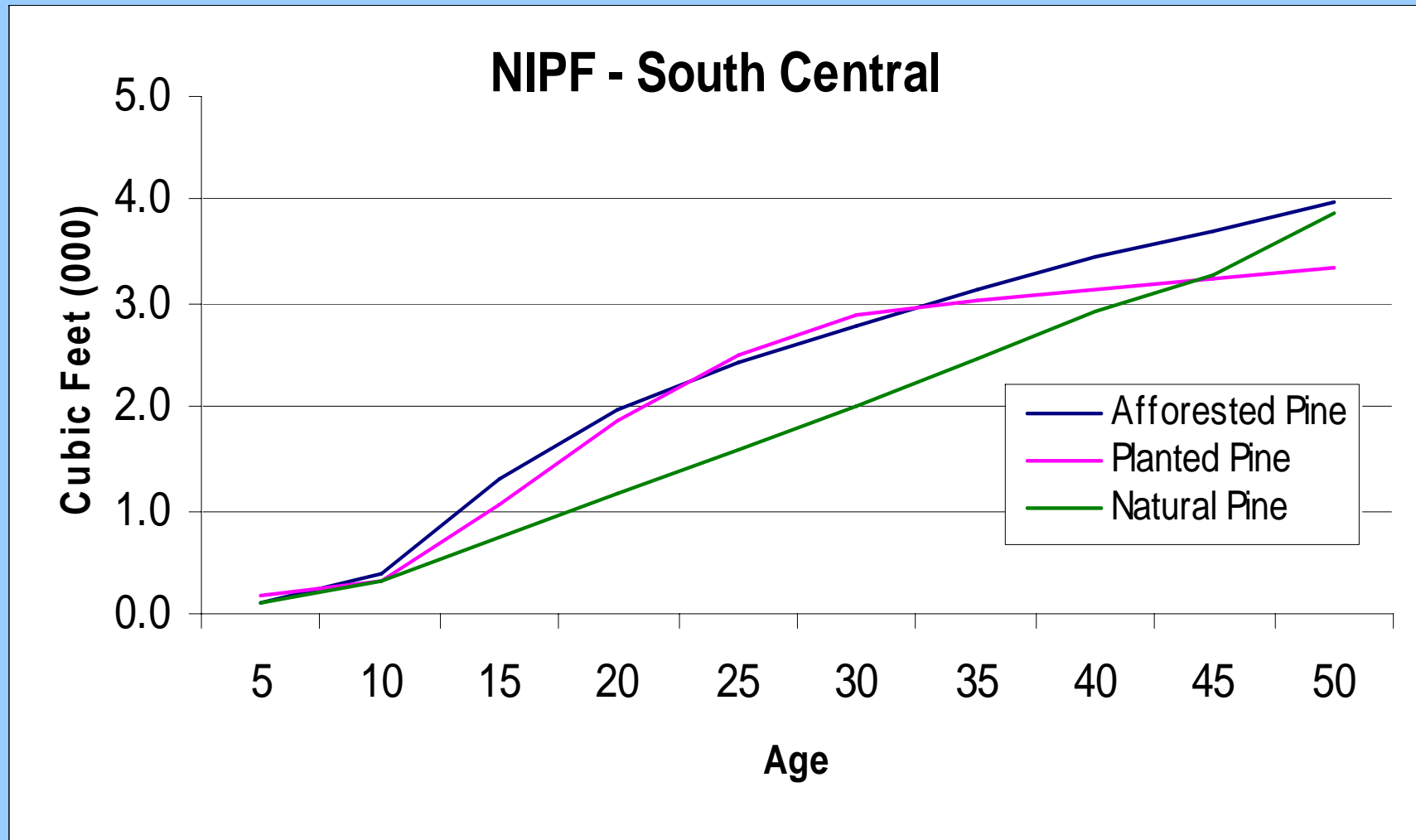
Common Forest Types on Non-Federal Land, 1992



Timberland in the United States, 2002



Yield and Private Timberland



Economics and Private Timberland

- Positive returns from intensive management (Alig et al. 1999)
- NIPF owners respond to investment incentives (Alig et al. 1990)
- FI and NIPF maximize profits (Newman and Wear 1993)

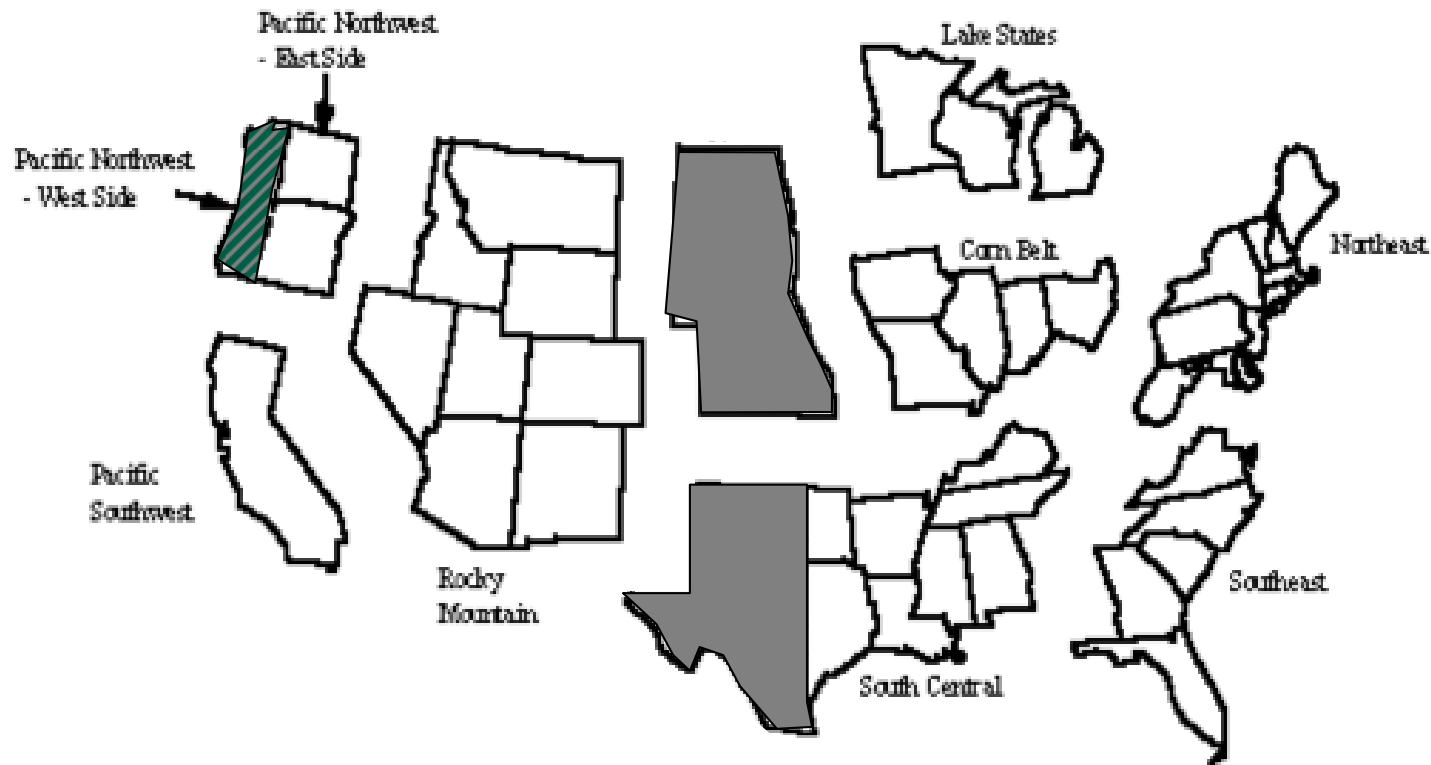


Forest and Agricultural Sector Optimization Model - GHG

- FASOMGHG is a dynamic, nonlinear programming model of the forest and agricultural sectors in the United States
- Model private timberland owner behavior
- Forest carbon sequestration accounting



FASOMGHG Timberland Regions



Expanded Timberland Data

- Detailed species type
 - South: planted pine, natural pine, oak-pine upland and bottomland hardwood
 - PNWW: Douglas-fir, other softwoods, hardwood
- Detailed management intensity
 - Planted pine
 - Uneven-age management



Afforestation in FASOMGHG

- Detailed planted afforestation
 - South
 - Planted pine – four management intensities
 - Bottomland hardwood
 - Corn Belt
 - Hardwood and softwood

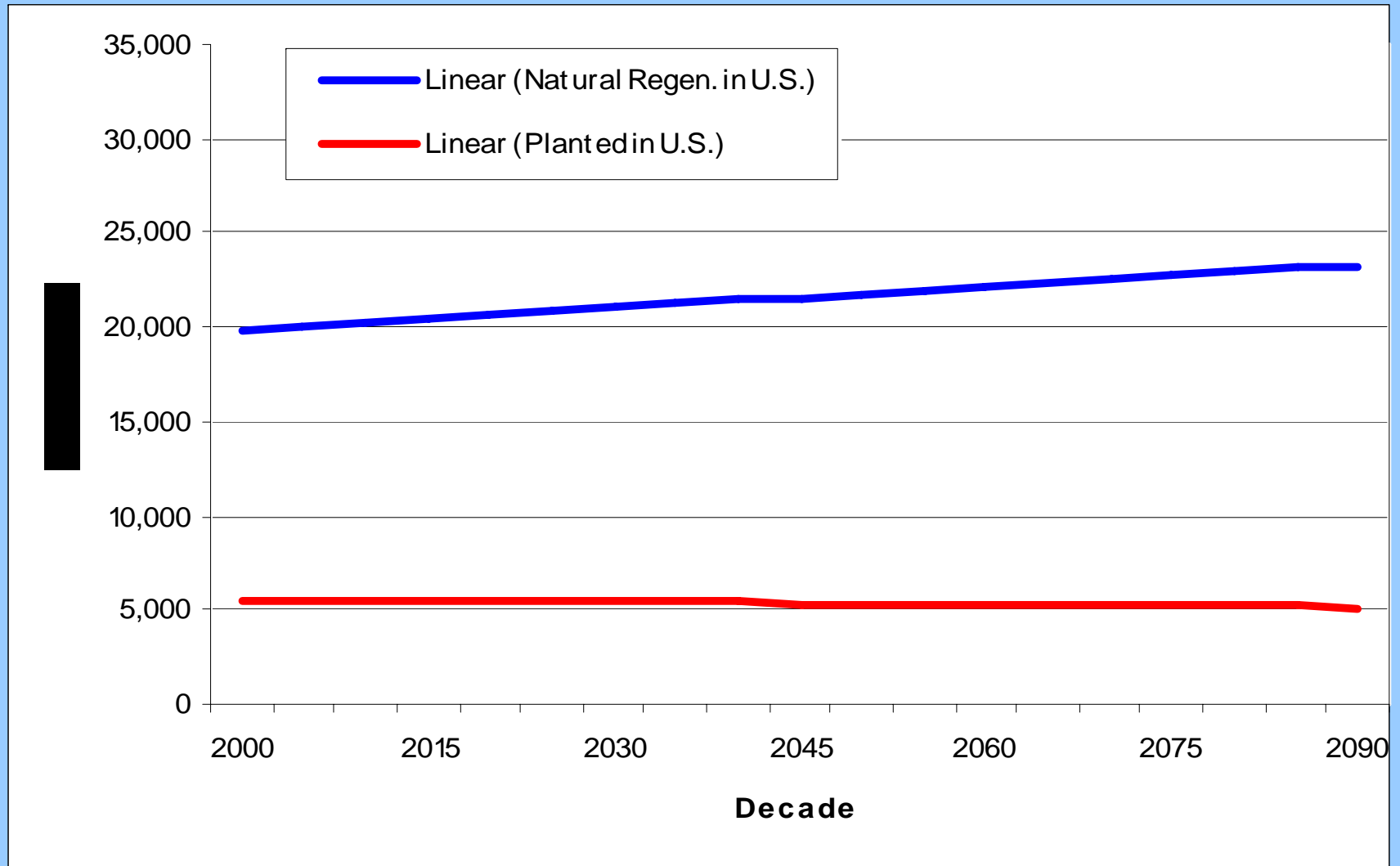


Management Costs in FASOMGHG

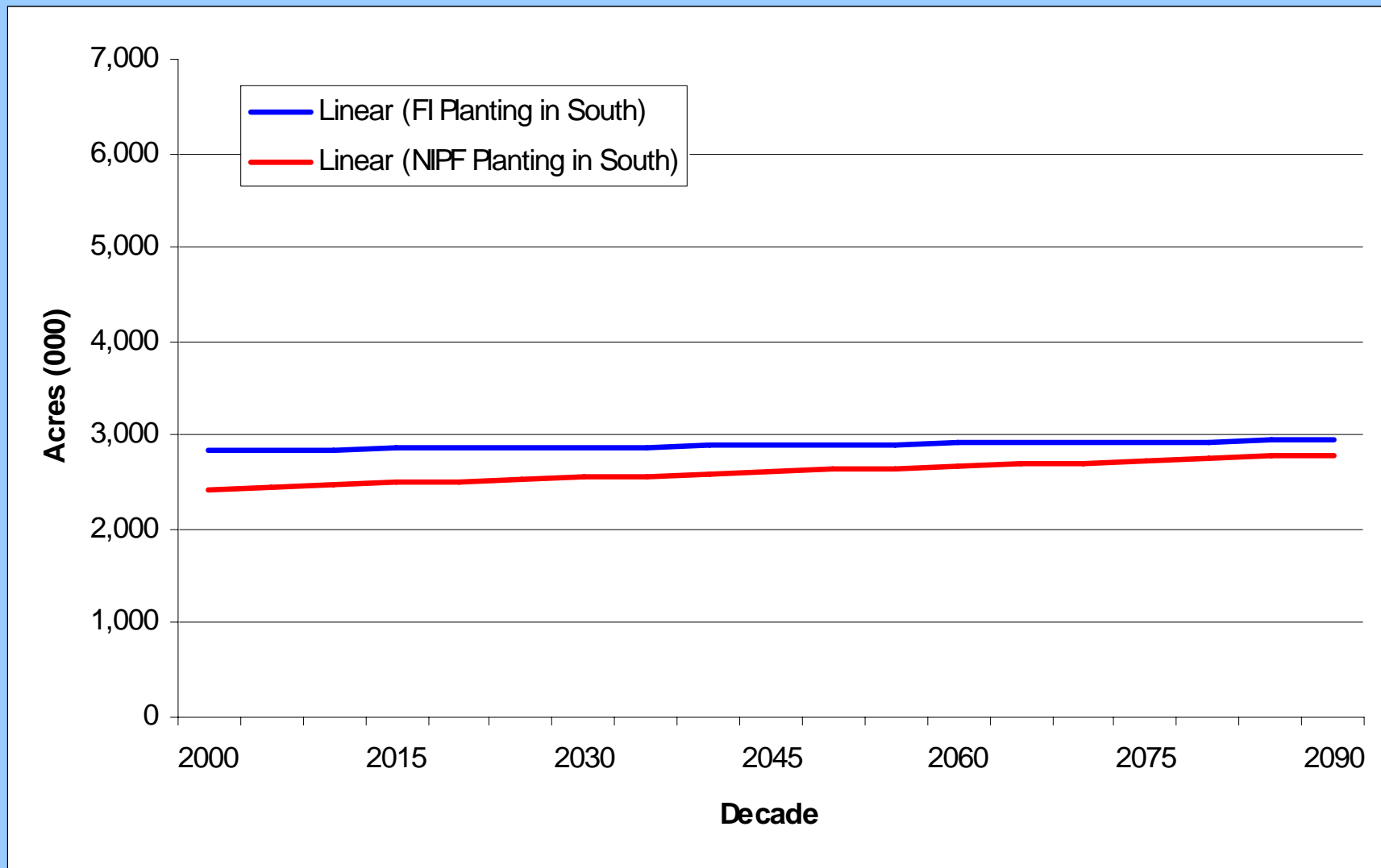
- Detailed management costs
 - Land conversion costs
 - Establishment costs
 - Intermediate treatment costs
 - Herbicide
 - Fertilization
 - Precommercial thinning



Preliminary Model Results



Preliminary Model Results

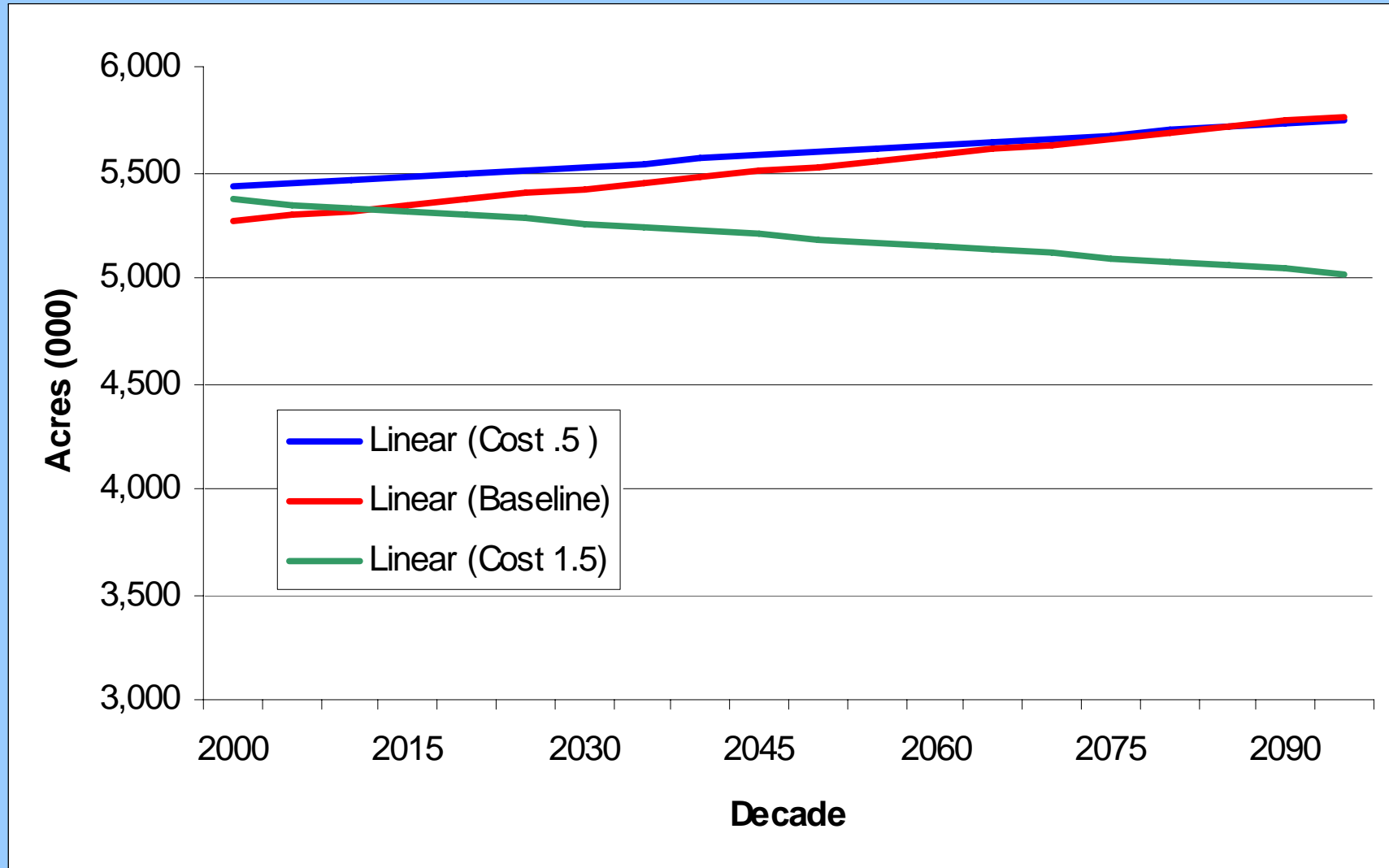


Potential Policy Modeling Scenarios

- Private timberland investment
 - Encourage investment
 - Incentives for investment in regeneration and afforestation practices
 - Restricted investment
 - Uncertainty in future markets
 - Limits to investment or restrictions in borrowing



Preliminary Model Results



Potential Policy Modeling Scenarios

- Afforestation
 - Carbon credits
 - Farm bill
- Joint production
 - Habitat improvement
 - Recreation
 - Changing landowner objectives



Future Steps

- Management Intensity
- Forest Type
- Public Lands
 - National Forest
 - Other Public
- Additional Policy Scenarios

