

**Understanding the Potential of Maine Forests
to Reduce GHG Levels:
A Joint Project of the Maine Forest Service
and Environment Northeast
and with Support from the U.S. Forest Service**

**Innovative Approaches to Climate Change:
A State-Federal Workshop
Pew Center on Global Climate Change**

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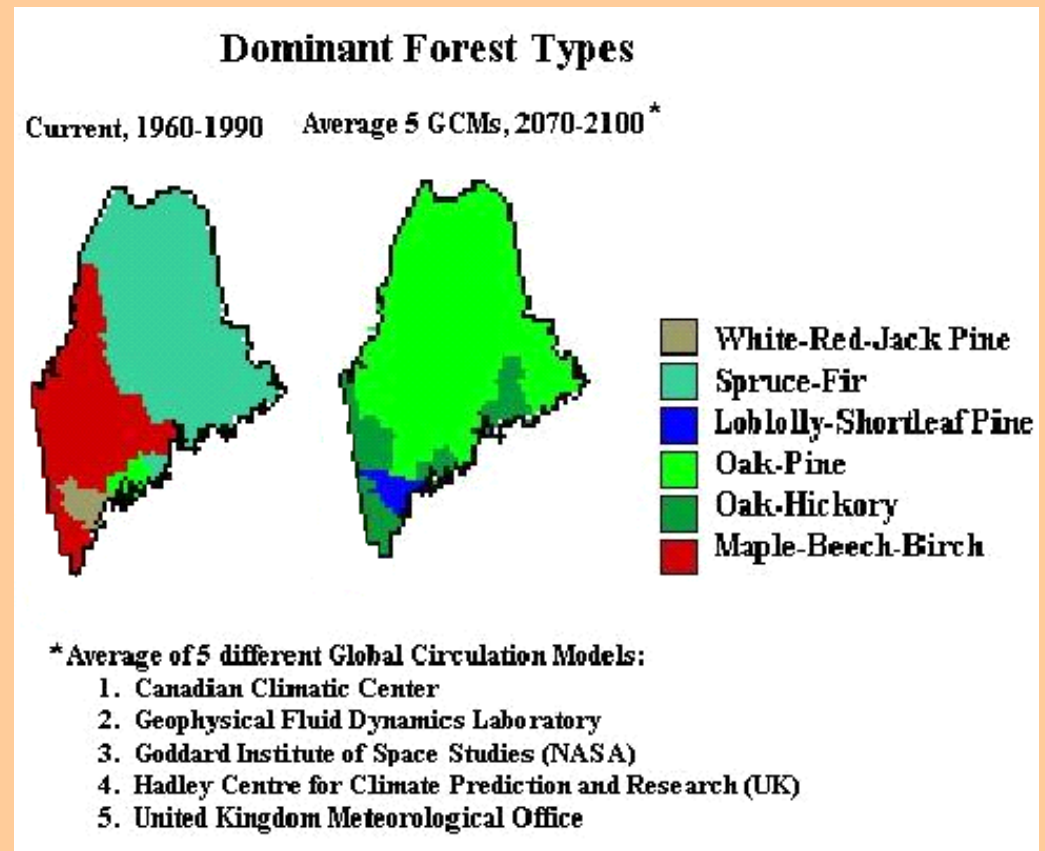
Why is Global Warming a Concern from a Forestry Perspective in Maine?

Consensus modeling of the gradual change scenario

Impacts on:

- Species
- Soils
- Insects and disease
- Operability

What if climate change is abrupt as outlined in 2003 Pentagon report that postulates an abrupt climate change scenario?



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The goal is to identify and quantify the benefits of silvicultural practices that could:

- ❖ Reduce atmospheric greenhouse gas levels**
- ❖ Increase yields and quality of timber in the long term**
- ❖ Maintain forest health**
- ❖ Provide an enhanced and diversified revenue stream to Maine landowners**
- ❖ Enhance and protect the environmental values of forests**

*Environment Northeast is a regional environmental group working on climate change and energy policy from offices in Hartford, New Haven and Maine.

New England Governors/Eastern Canadian Premiers Conference Commitment

- **Activity in Maine driven by New England Governors/Eastern Canadian Premiers resolution on global warming in 2000 as discussed by Gina McCarthy of Connecticut**
- **Potential for Regional Greenhouse Gas Initiative (RGGI) as discussed by Ellen Seidman of Massachusetts**
- **If offsets included within RGGI, a significant offset market could be established by 2010, which could support forestry projects**
- **Opportunity for multiple benefits with forestry as component**

Greenhouse Gas Planning Maine

- **In 2003 Maine Public Law 237 required Dept. of Environmental Protection to complete Climate Action Plan for the state**
- **Goal to reduce emissions to 1990 levels by 2010, 10% below those levels in 2020, and by as much as 75% over longer term**
- **During 2003 and 2004, Maine DEP worked with approximately 100 stakeholders (Industry, Government, NGOs, Academia) to develop Climate Action Plan**
- **PL 237 required that “The action plan...must allow sustainably managed forestry, agricultural and other natural resource activities to be used to sequester greenhouse gas emissions.”**
- **Agriculture and Forestry Working Group (AFWG) charged with addressing these sectors**

Big Ticket Recommendations for the GHG Planning Effort in Maine

54 Recommendations in Maine's Climate Action Plan – Following are the top five in terms of total GHG savings in the year 2020:

- 1. Offset requirements for generators of electricity based on action on Regional Greenhouse Gas Initiative (including forest offsets)**
- 2. Implement tailpipe GHG emissions standards**
- 3. Regional cap-and-trade program (i.e., RGGI)**
- 4. Encourage use of clean diesel fuel and reducing black carbon emissions**
- 5. System benefit charge to fund renewable energy projects**

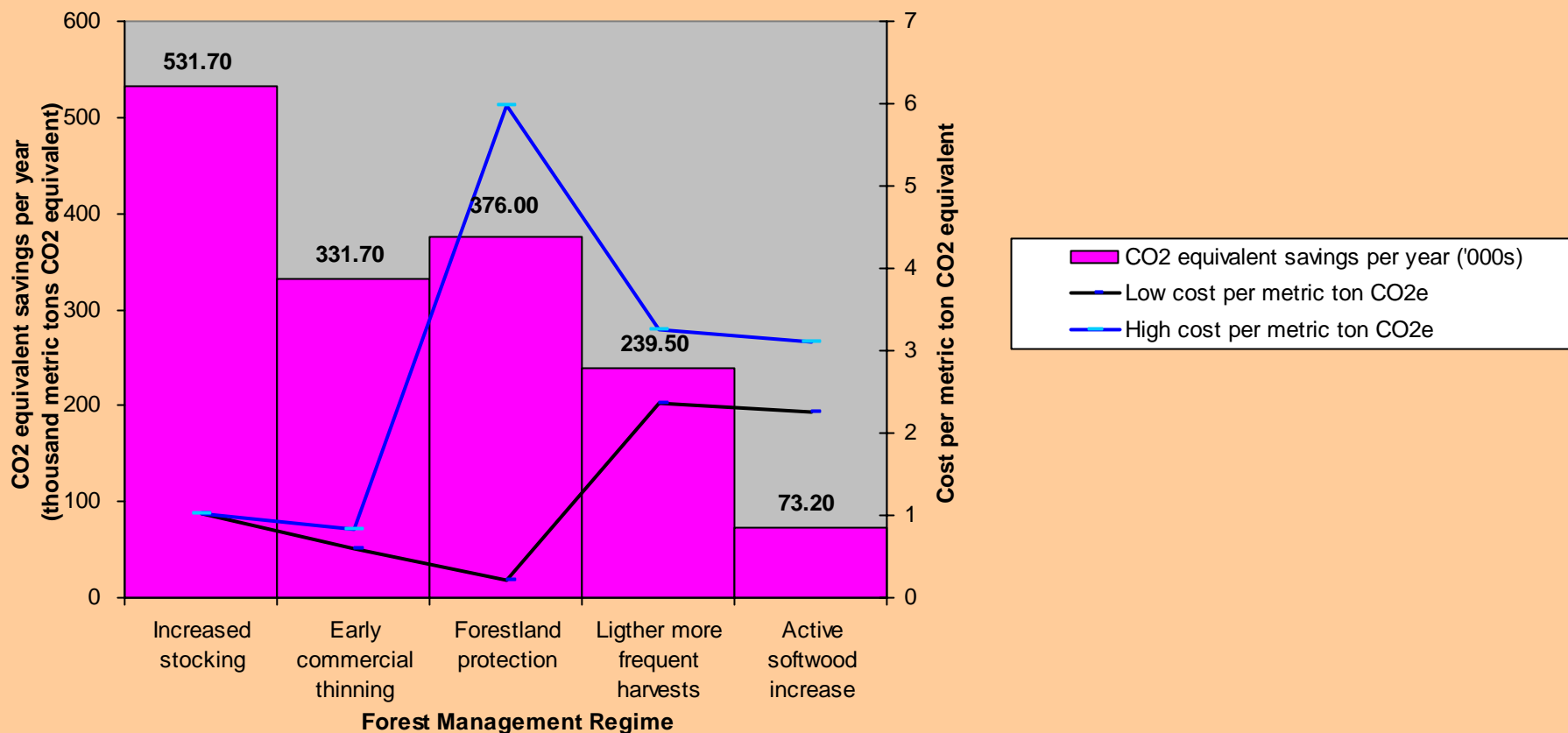
Implementation to be developed by stakeholder groups. Several forestry options also included.

Preliminary Modeling of Role of Forests for Maine Climate Action Plan

- **Several promising options included among the 54 recommended actions in Maine's Climate Action Plan released on December 1, 2004:**
 - **Increased stocking**
 - **Forestland protection**
 - **Early commercial thinning**
 - **Lighter more frequent harvests**
 - **Active softwood increase**
- **Implementation to be developed by a separate stakeholder group that has not yet been created**
- **Climate Action Plan recognized need for further research and modeling for implementation of the Plan**

Preliminary Modeling of Role of Forests for Maine Climate Action Plan

Total GHG Savings and Costs, 2005-2020*



*Based on annual actions over 15 years with GHG savings over average stand life levelized for purposes of Maine's Climate Action Plan

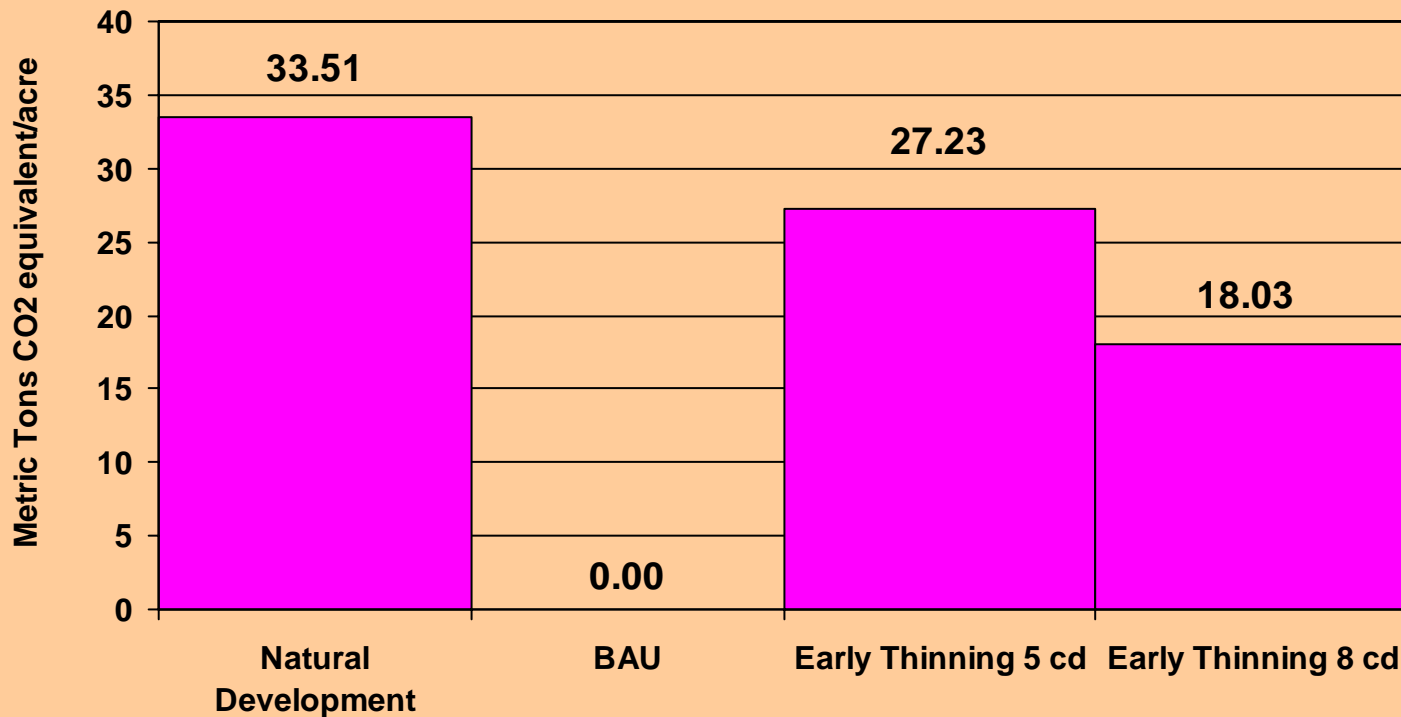
Current Modeling of Project-Based Management Regimes: Early Thinning

- **Maine Forest Service refining preliminary modeling to analyze forest sequestration at the project level**
- **Targets existing well-stocked northern hardwood (Sugar Maple/American Beech/Yellow Birch) poletimber-sized stands with approx. 15-20 cords per acre**
- **Modeled business-as-usual (BAU) with heavy harvest 40 years in the future, and 5-cord and 8-cord thinning immediately and with a re-entry at the same time as the BAU harvest**
- **Scenarios modeled for the period 2003-2095**
- **Conducted Net Present Value analysis based on harvest entries and residual stand value at the end of the period of analysis with 6% discount rate**

Early Commercial Thinning Model Results

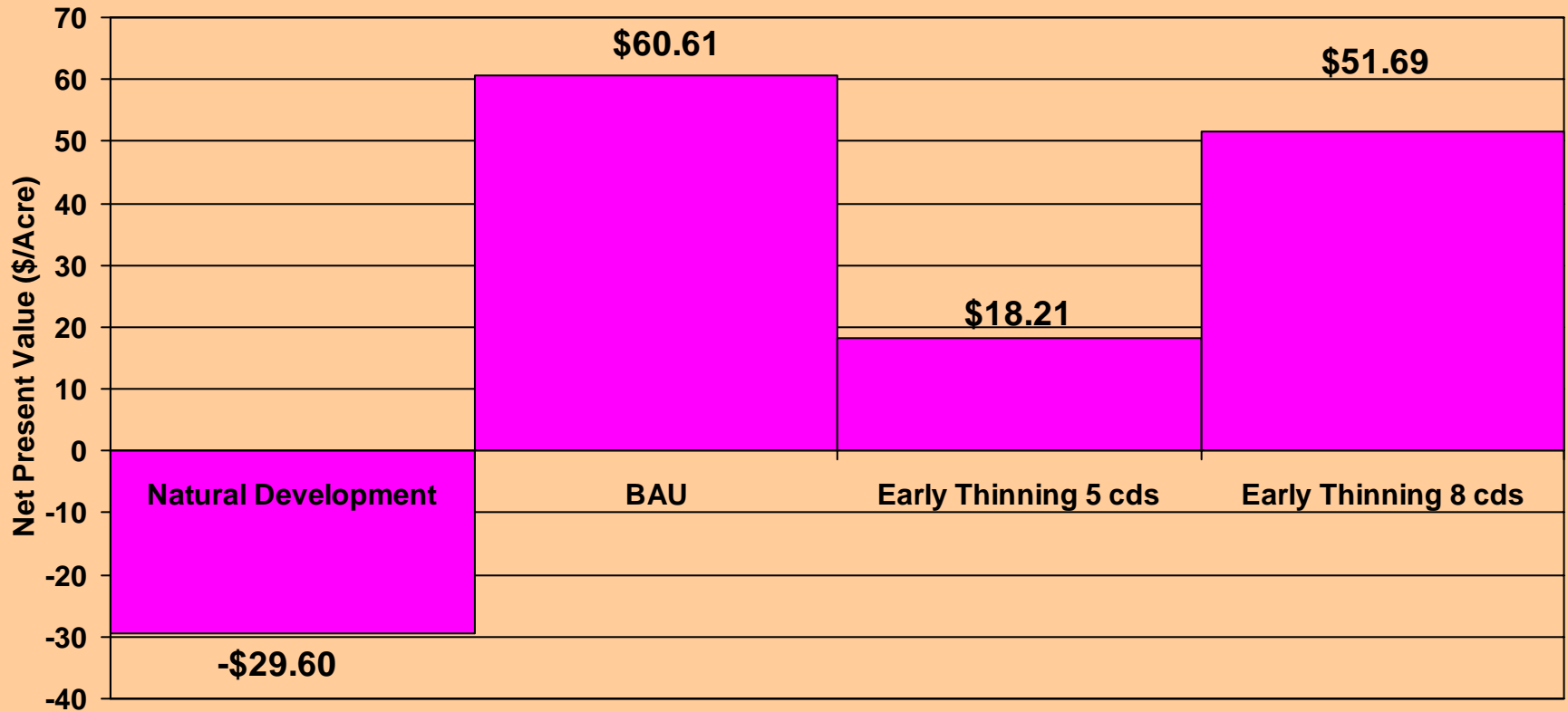
Additional Carbon Savings in Four Scenarios

ECT Net Additional CO2 2003-2095 (Metric tons CO2 equivalent/acre)



Early Commercial Thinning Model Results: Net Present Value of Four Scenarios

ECT Net Present Value 2003-2095 (\$/Acre)



Take Home Messages

- **In the long-term, managing for wood products under any of these scenarios will reduce GHG levels because, in the long-term, net sequestration in the natural development scenario will approach zero, while the others will continue to displace fossil fuels**
- **Among the scenarios modeled, the 5-cord early thinning maximizes carbon sequestration; the 8-cord early thinning is not far behind in terms of carbon**
- **Modest prices (e.g., \$0.50-\$1.50 per metric ton CO₂) for ALL additional carbon would make early thinning regimes comparable with BAU management**
- **In addition, the value of the 5-cord thinned residual stand is roughly double that of the BAU**
- **We believe we can optimize the early thinning regimes to produce even better results**
- **The tools for modeling of forest management have proved cumbersome and could be improved upon**

Next Steps

- **Review our analysis with other stakeholders**
- **Refine the analysis of other forest management options for enhanced carbon sequestration**
- **Work to make sure that the markets allow for forestry offset projects**
- **Participate in development of a GHG registry for the region**
- **Create protocols for forestry projects**
- **Conduct a pilot project to demonstrate how management to enhance carbon sequestration could work in the field**
- **Outreach to and collaboration with forest landowners and environmental community**