Carbon Sequestration Implications for Idaho

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December 2007

“ Wood is the most renewable and sustainable of the major building materials. Comparing the environmental effects of common building materials, wood has the least impact on total energy use, greenhouse gases, air and water pollution, and solid waste. For every billion board feet of wood we use instead of other building materials like steel and concrete, we save 720 million tons of carbon dioxide from entering our atmosphere.”

From “ Forest, A Legacy to Our Children” 2002

Carbon Sequestration in Idaho History

- Senate Bill 1379A-Idaho Law 22-5201 (2003)
- Idaho Law 22-5103 (enacted July 1, 2003) Instructed Idaho Soil Conservation Commission (SCC) Prepare a Report
- Report “Carbon Sequestration on Idaho Agricultural and Forest lands” was completed February ,2003
- Carbon Sequestration Advisory Committee (16 members)
- Identified High-Moderate-Low Potential for state-wide carbon sequestration projects

High Potential for State-Wide Carbon Sequestration

- Afforestation (new forest) on poorly stocked forest lands
- Nutrient management
- Afforestation on non-stocked forest land
- Afforestation on marginal cropland
- Ethanol production and use
- Biogas recovery, digesters

Idaho Carbon Credit Exchange Framework

(Draft August 2007)

- Report identifies market parameters
- Identify carbon in terrestrial and soil reserves
- Provide offset provider education
- Provide ideas for market infrastructure components
- Discuss baseline and quality issues
- Carbon inventory and documentation
- Discuss Offset Aggregators, Carbon Auditors & Carbon Sequestration Consultants

A Carbon Sequestration Example

- A log truck with 27 green tons payload
- Convert to a dry ton equals 13.5 tons
- Convert to metric equals 12.27 tonne
- 12.27 metric tons of carbon x 3.6667 equals 45 metric tonne of CO_2 per truckload of logs

Nez Perce Tribe
Carbon Sequestration Example

- 400 Acres Ponderosa Pine plantation
- Located Kamiah, Idaho
- Above ground biomass projected 46,859 metric tons of carbon or 171,974 metric tons of CO_2 over an 80 year period
- Below ground 9,044 metric tons of carbon or 33,192 metric tons of CO_2
- Total anticipated carbon to be sequestered 55,903 metric tons or 205,165 metric tons of CO_2 over an 80 year period
- Project would generate 512,912 metric tons CO_2 per acre over 80 yrs. 6.4 metric tons/acre average ($12.82/acre @ CCX rates of $2.00/metric ton)

Forestry Example- Idaho FPA Rules

170 Trees Per Acre- 4.2 Metric tonnes/acre average

Year	Age	Trees per Acre	Total Carbon (tons/acre)	Metric Tons of CO_2	Board Foot Volume (/acre)
2006	**1**	170	1.3	4.3	0
2011	**6**	150	1.1	3.7	0
2016	**11**	132	1.8	6.0	0
2021	**16**	129	4.2	14.0	468
2026	**21**	128	8.7	29.0	2,396
2031	**26**	127	15.8	52.7	4,685
2036	**31**	127	23.5	78.3	7,947
2041	**36**	125	32.2	107.3	12,505
2046	**41**	123	41.4	138.0	17,530
2051	**46**	121	50.8	169.3	22,553
2056	**51**	118	60.3	201.0	27,126

Initial Conditions Grand fir Habitat type
Stocking - 170 TPA
Mix of PP(85) and DF(85)
FVS Growth Model

Idaho Forestry Management Example

300 Trees Per Acre- 4.8 Metric tonnes/acre average

Year	Age	Trees per Acre	Total Carbon (tons/acre)	Metric Tons of CO_2	Board Foot Volume (/acre)
2006	**1**	300	5.4	18.0	0
2011	**6**	265	4	13.3	0
2016	**11**	234	4.9	16.3	0
2021	**16**	226	8.5	28.3	0
2026	**21**	224	15.2	50.7	2,548
2031	**26**	222	25.3	84.3	6,108
2036	**31**	220	32.2	107.3	11,092
2041	**36**	214	39.6	132.0	16,634
2046	**41**	209	49.4	164.7	21,729
2051	**46**	202	60.2	200.7	27,845
2056	**51**	195	72.5	241.7	32,909

Initial Conditions
Grand fir Habitat type
Stocking - 300 TPA
Mix of PP(150) and DF(150)
FVS Growth Model

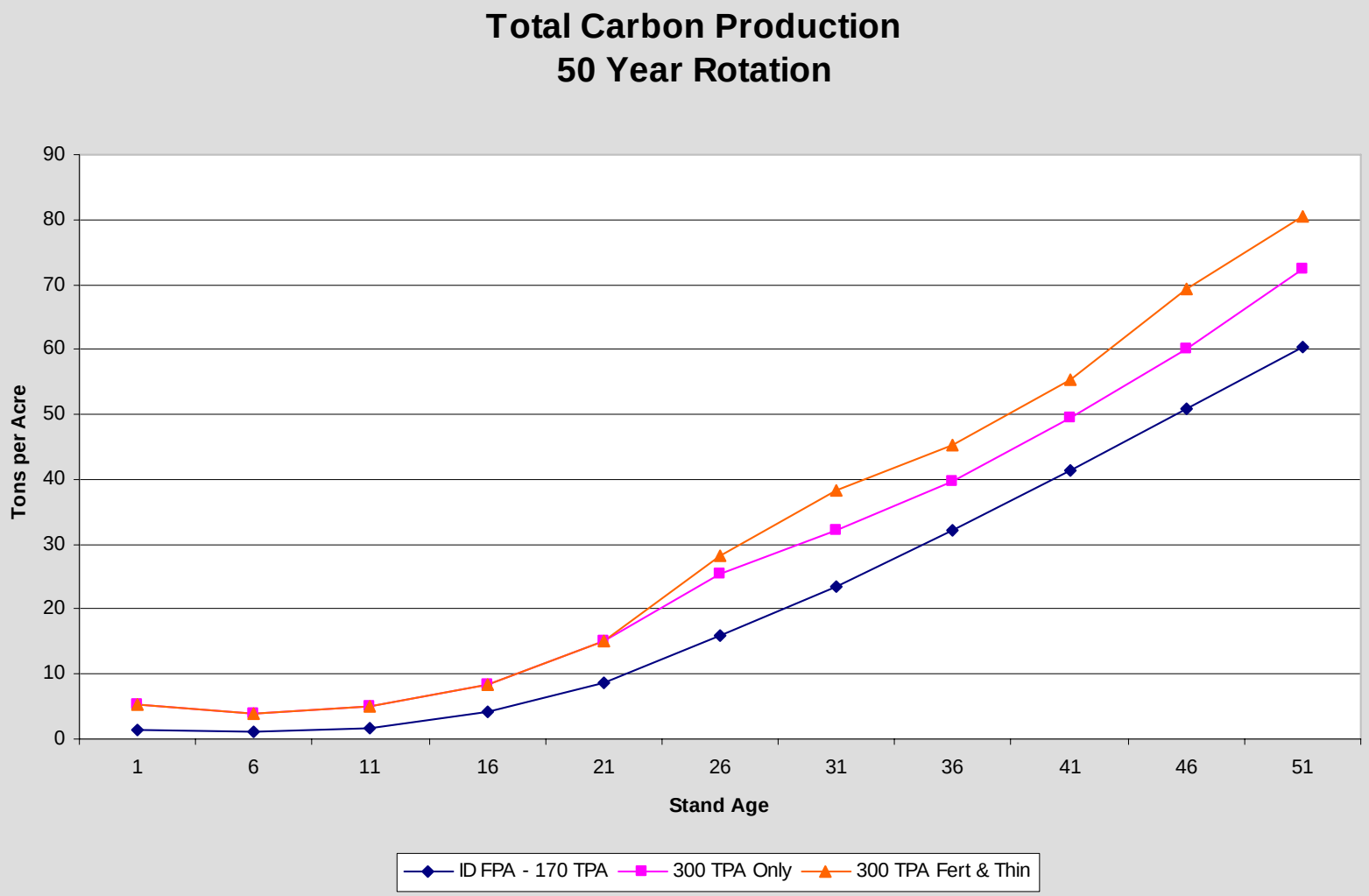
Idaho Forest Management Example

300 Tree/Acre w Fertilization & Thinning-5.3 Metric tonnes/acre

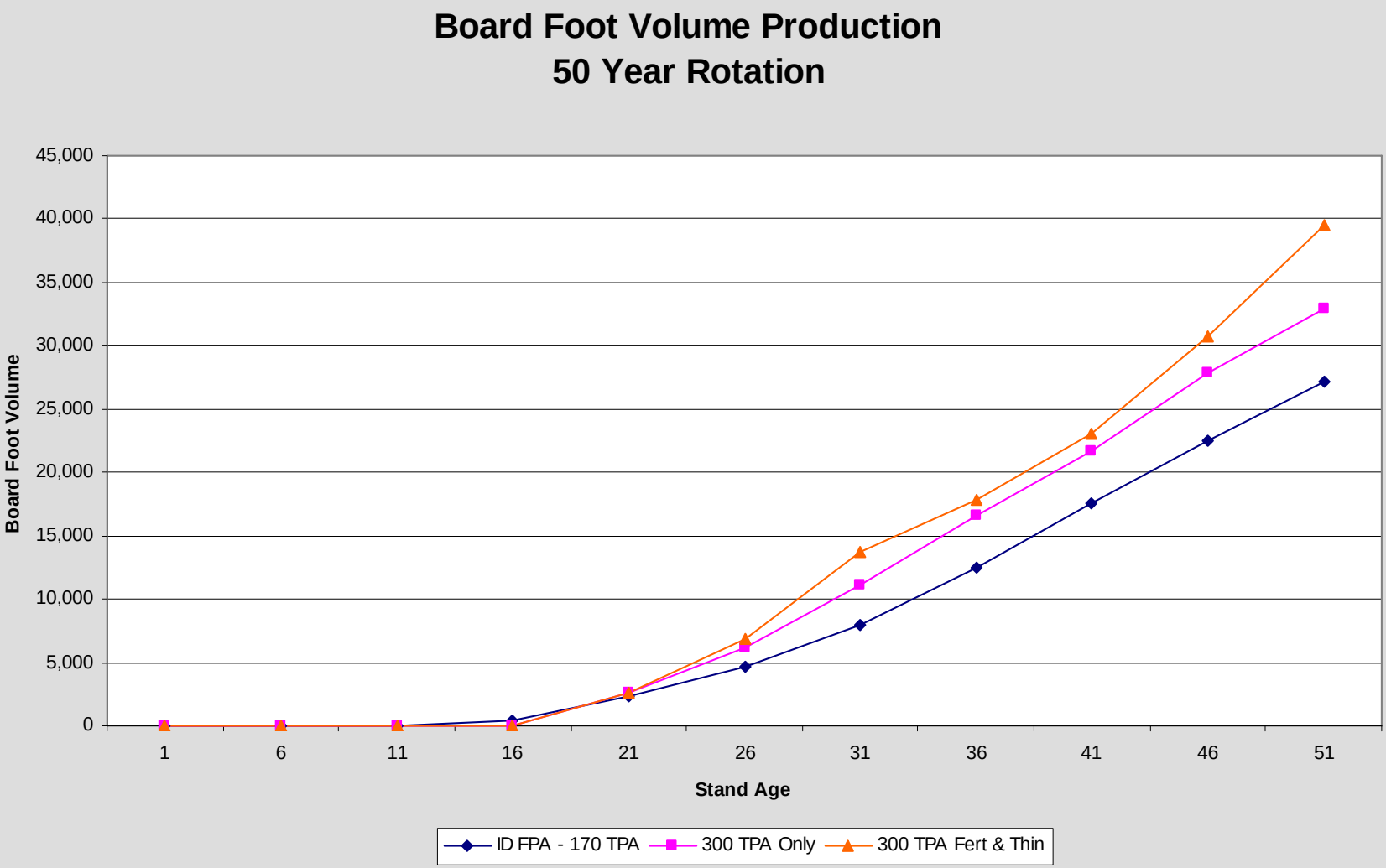
Year	Age	Trees per Acre	Total Carbon (tons/acre)	Metric Tons of CO_2	Board Foot Volume (/acre)
2006	1	300	5.4	18.0	0
2011	6	265	4.0	13.3	0
2016	11	234	4.9	16.3	0
2021	16	226	8.5	28.3	0
2026	21	224	15.2	50.7	2,548
2031	26	222	28.2	94.0	6,857
2036	31	220	38.2	127.3	13,769
2041	36	118	45.4	151.3	17,816
2046	41	116	55.3	184.3	23,114
2051	46	114	69.4	231.3	30,792
2056	51	111	80.5	268.3	39,558

Initial Conditions Grand fir Habitat type
Stocking - 300 TPA
Mix of PP(150) and DF(150)
Thin @ 35 years of Age
Fert @ 46 years of Age (200 lbs. nitrogen)

Carbon Comparison by Treatment



Board Foot Comparison by Treatment



Market Comparisons of CCX and ECX

- Chicago Climate Exchange (CCX) approximate market $2.00/ metric tonne of CO_2
- European Climate Exchange (ECX) approximate market $35.00/metric tonne CO_2

Idaho Comparison of Carbon Projects by Treatment and CCX Exchange

- 170 trees/acre over 50 yrs generates 201 tonne CO_2= $8.04/acre using CCX averaged over the 50 yrs
- 300 trees/acre over 50 yrs generates 242 tonne CO_2= $9.68/acre using CCX averaged over the 50 yrs
- 300 trees/acre w fert and thin over 50 yrs generates 268 tonne CO_2 = $10.72/acre using CCX averaged over the 50 yrs
- CO_2 emitted during harvest and management cost to be deducted

Idaho Comparison of Carbon Projects by Treatment and ECX Exchange

- 170 trees/acre over 50 yrs generates 201 tonne CO_2= $140.70/acre using ECX averaged over 50 yrs
- 300 trees/acre over 50 yrs generates 242 tonne CO_2= $169.40/acre using ECX averaged over 50 yrs
- 300 trees/acre w fert and thin over 50 yrs generates 268 tonne CO_2 = $187.60/acre using ECX averaged over 50 yrs
- CO_2 emitted during harvest and management cost to be deducted

National Protocol Efforts & “The Managed Forest in Climate Change Policy” November 2007

- The Program design elements include an assessment of:
  - U.S. DOE 1605(b) Voluntary Regulations
  - Chicago Climate Exchange
  - NE Regional Greenhouse Gas Initiative
  - California Climate Exchange

Managed Forest in Climate Change Policy

- Identifies Elements & Preferred Policy Options for a National Protocol for:
  - Afforestation
  - Reforestation
  - Forest Management
  - Harvested Wood Products
  - Forest Conservation

Legislative Issues

- Identification of Carbon Footprint
- Reduction Guidelines for Emitters
- Forestry as Viable Offset
- Harvested Wood & Long Term Storage
- Recognize Certification as GHG reduction
- Tracking Harvested Wood and Inventory Techniques
- Setting Baselines & Additionality
- Business as Usual (BAU)
- Base Year when the carbon management project is launched

Carbon Sequestration Implications for Idaho

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EMS Certified Lead Auditor

“Providing A Balanced Approach to Natural Resource Management”