

## **State Forest Service's Carbon Management Guidelines 'Good Forest Management is Good Carbon Management'**

**Summary:** Based on existing research and emerging case studies, a well-managed forest is better for reducing atmospheric carbon dioxide (CO<sub>2</sub>) than a poorly managed forest. Besides growing faster and taking up more CO<sub>2</sub> from the atmosphere, managed forests yield abundant timber products that store CO<sub>2</sub> while in use, and those products may be produced with less energy from fossil fuels than competing products such as aluminum or concrete.

### **Key points**

- There are 3 basic ways to reduce atmospheric CO<sub>2</sub> through forestry: increase the amount of carbon stored on land and in soil; use harvested wood for durable products; and substitute biomass for fossil fuels.
- The best combination of these 3 approaches is not the same everywhere. Existing forest conditions and landowner objectives will determine the best mix.
- Poorly managed forests are usually not growing biomass to the full potential of the site. Improved management can increase the rate of CO<sub>2</sub> removal from the atmosphere.
- Forests damaged from large-scale disturbances such as insects, wildfire, or wind may emit significant quantities of CO<sub>2</sub> from decaying wood and disturbed soils. Good carbon management includes utilizing the damaged wood for products or energy, and most importantly, restoring the sites.
- Incentive programs or an active carbon trading market that includes forestry activities will be necessary to induce landowners to improve forest and carbon management.
- Some additional research is required to develop and identify the specific "best practices" that are optimal for both forest and carbon management, and to develop efficient methods to monitor and verify changes in forest and wood products carbon.

### **Some statistics**

- Forests of the U.S. remove about 700 million tons of CO<sub>2</sub> from the atmosphere each year and store the carbon in biomass, soils, and wood products. This offsets about 10% of U.S. emissions from using fossil fuels.
- Electricity use of the average U.S. household emits 6 tons CO<sub>2</sub> per year.
- An average acre of forest land in Pennsylvania removes about 3 tons of CO<sub>2</sub> from the atmosphere each year. Much higher rates are possible with intensive management.
- Using more forest biomass for fuel and wood products from existing forests could increase the current forest offset from 10% to 18% of fossil carbon emissions.
- Ecological analyses indicate that there is the potential to increase carbon uptake of U.S. forests by 170%.
- In aggregate, forests could offset one-fourth of current CO<sub>2</sub> emissions.

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