Sustainable Forest Management

Wood to Energy in the West

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Imagine an Invention

- Solar Collector
- Organic Battery
- Collectors provide complex habitat
- Structures for human habitat
- Carbon filtration from atmosphere
- Water storage and filtration system
- Produces the oxygen we breath

Sustainable Forest Management

- **For what and for whom?**

- **Landowner objectives**
  - **Aesthetics – recreation?**
  - **Wildlife Habitat?**
  - **Wildfire risk management?**
  - **Insects and Disease?**
  - **Climate Change mitigation? Adaptation? Resilience?**
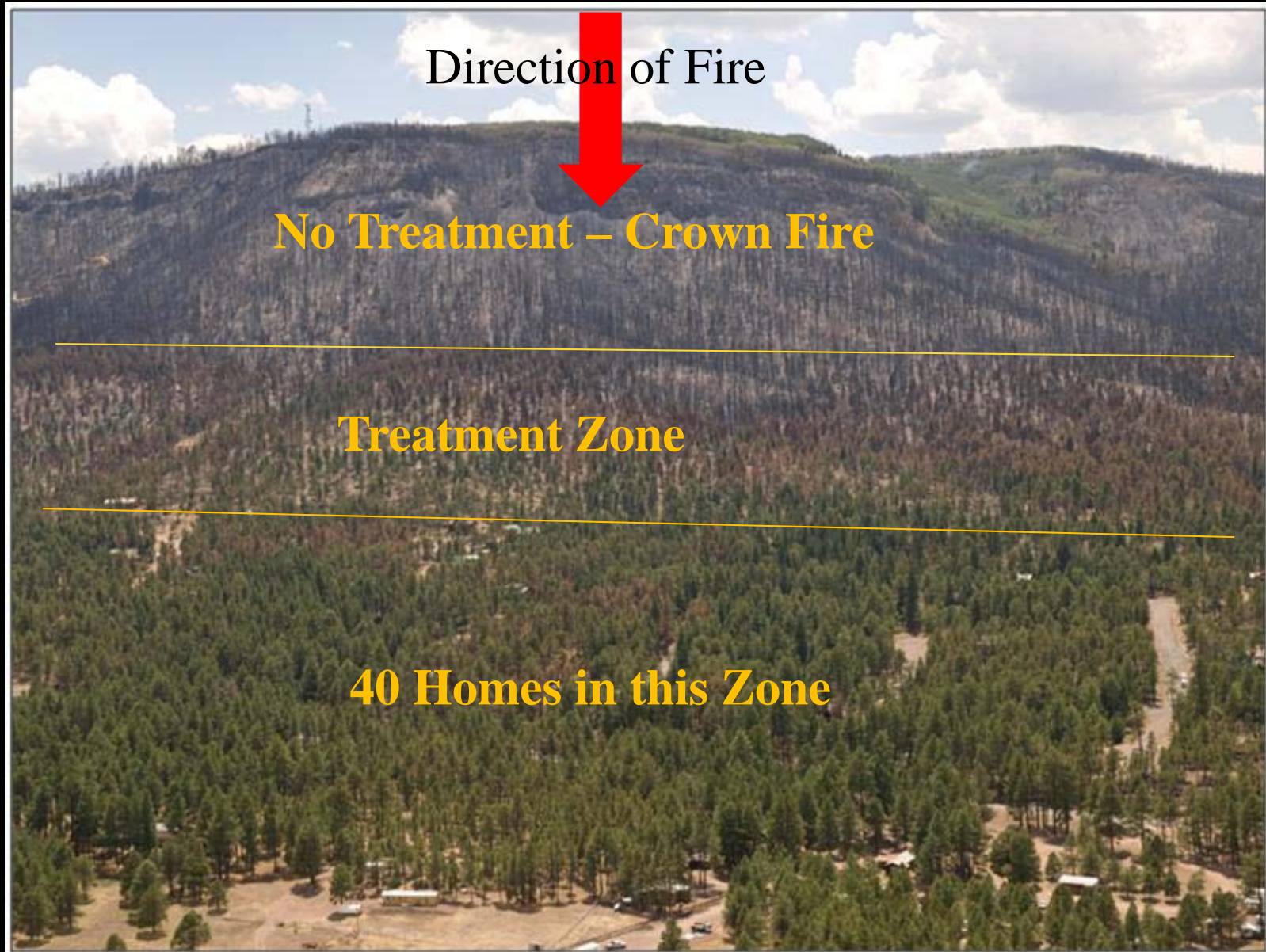 - **Wood production?**

This

Or

This

Planned fire

Wallow Fire - AZ - 2011

Direction of Fire

No Treatment – Crown Fire

Treatment Zone

40 Homes in this Zone

Biomass Rides Coattails

- **Higher values – Integrated Industry;**
  - Flooring, windows, boards, posts & poles, shavings, pulp, energy – pellets, chips
  - Energy is lowest value residuals
- **OR**
- **Other objectives pay for treatment**
  - Fire thinning
  - Wildlife Habitat
  - Watershed protection

Forest Health

Spruce Budworm

Mountain Pine Beetle

Fire Hazard & Bark Beetle Hazard Thinning Project

Slash, Pile and Burn or Pay to Thin Remove and Utilize

Existing Systems

Chadron State College – 17 yr

University of Idaho -24+ yr

Pulp Mill -CHP

Darby, MT – 8+ yr

Industry –
Wood Products

Food –
Potatoes, Beer

10. 9. 2003

Darby, MT K-12 Schools

- Replaced Fuel Oil w/ Wood Chips
- Operational in 2003 = 8 yr
- Saved $30,000 yr 1 @ $1.00/gal
- Saved $140,000 yr 5 @ $3.50/gal
- Total Saved $800,000+
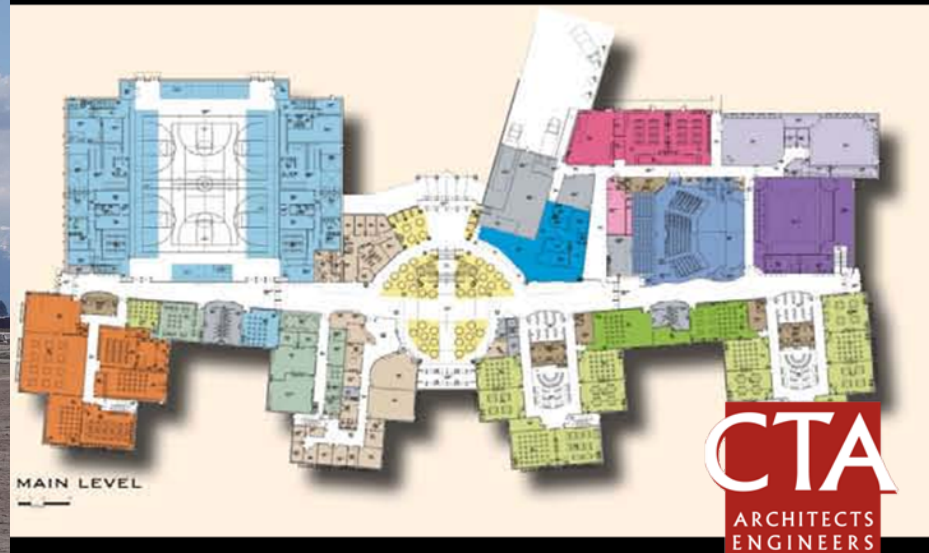- Cost: $850,000
- Useful life 30+ yr
- Teacher salary~ $30,000/yr

Darby, MT

High Tech
Control Systems

New Construction
Glacier High School

A. Integrated wood heat during schematic design.
B. Wood heating system cost ~½ conversion.
C. Wood system meets 95% annual load.

MAIN LEVEL

CTA
ARCHITECTS
ENGINEERS

Production & Transportation

Local Jobs

Pellet Manufacturing Plant

Fuel Cost Comparison

Bar chart titled "Fuel Cost Comparison" with y-axis labeled "$ per thousand MJ's" ranging from 0 to 25.

- Fuel Oil: ~23.5, labeled $3.25/gallon
- Propane: ~22, labeled $2.00/gallon
- Natural Gas: ~7.5, labeled $7.50/decatherm
- Pellets: ~9.5, labeled $150.00/ton
- Wood Chips: ~3.6, labeled $40.00/ton
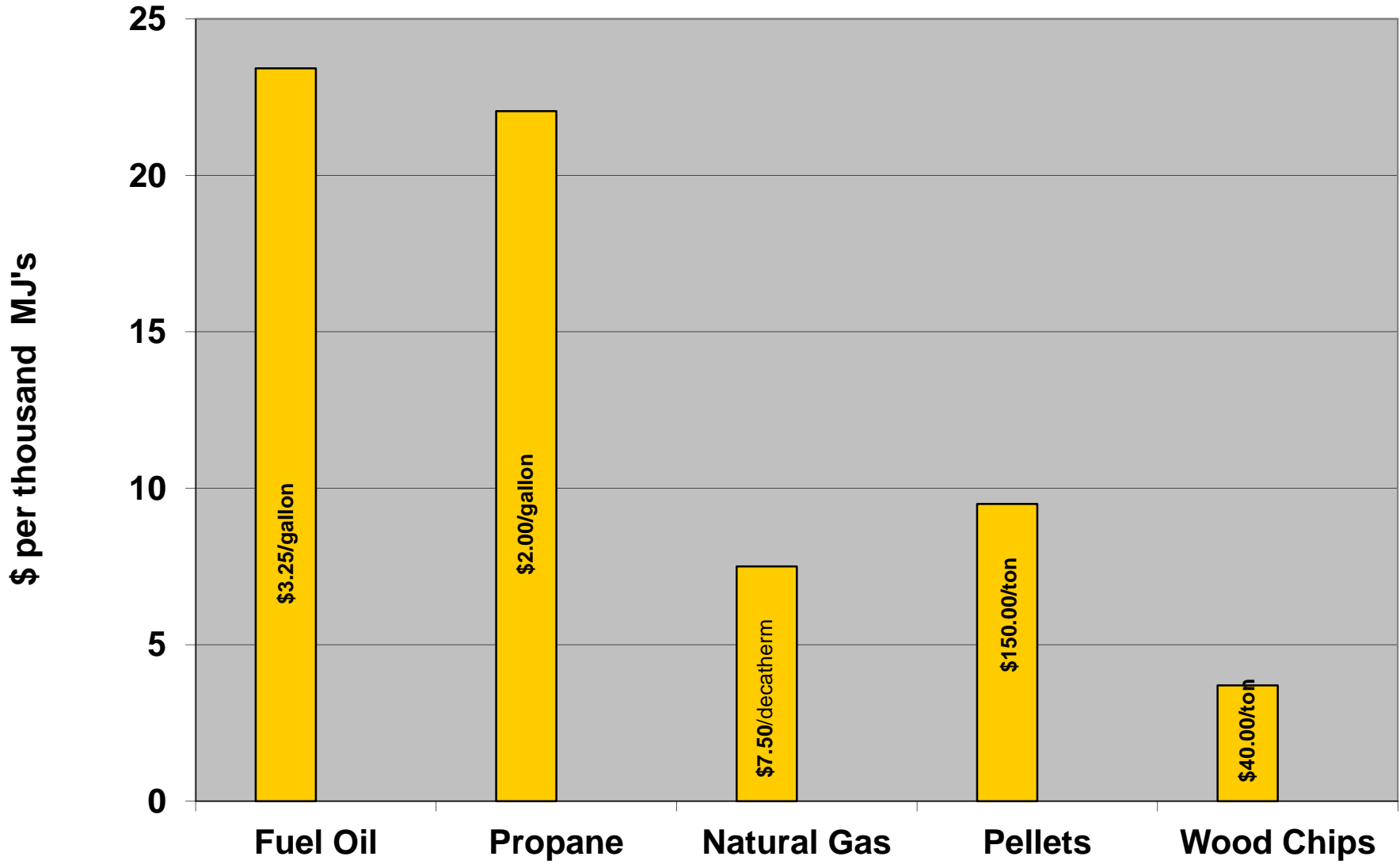
Take Home on Wood

- **Renewable, Domestic Energy**
- **Co-Benefits!**
  - **Wildfire mitigation**
  - **Watershed protection**
  - **Air emissions**
- **Save Money & Create Jobs!**
- **Reduced foreign oil dependence**
- **If you don't grow it, you mine it!**
- **Forests are green!**