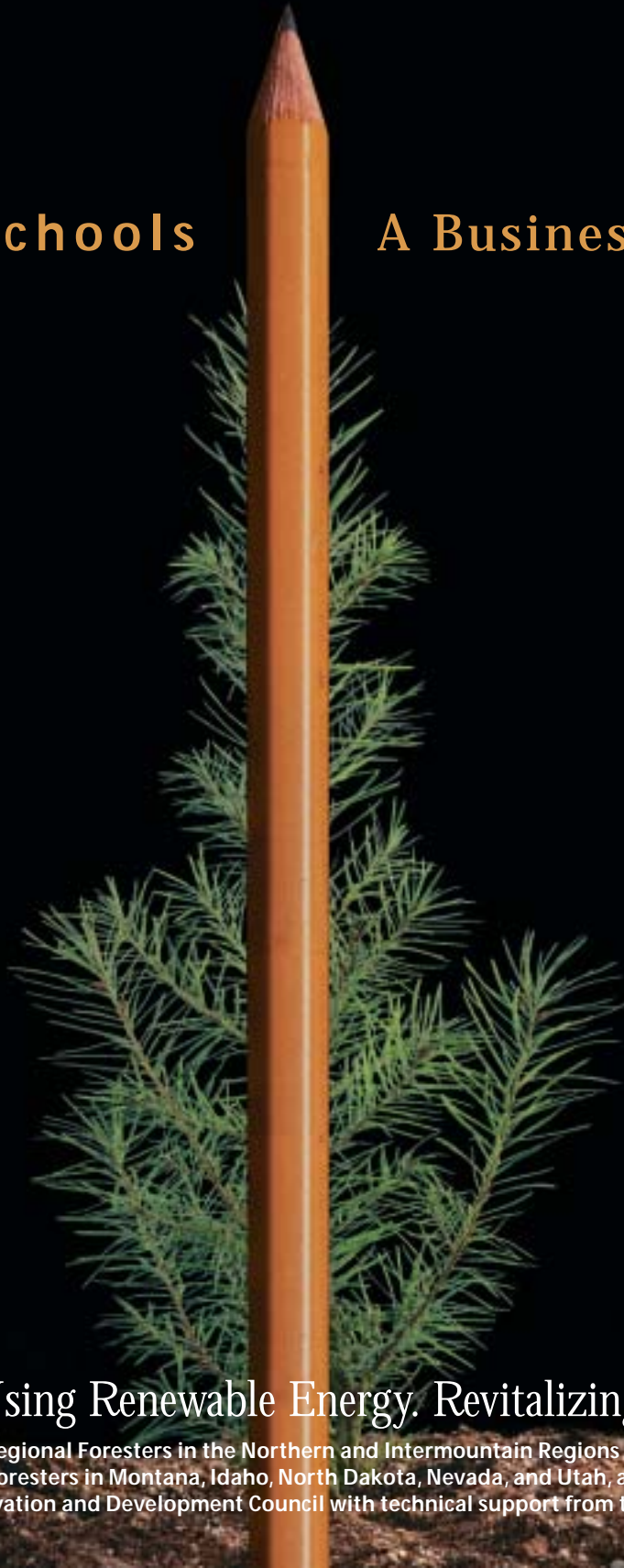


*[The right idea, for the right reason, at the right time.]*

**[Fuels for Schools**

**A Business Outlook]**



**Restoring Forests. Using Renewable Energy. Revitalizing Communities.**

A partnership between the Regional Foresters in the Northern and Intermountain Regions of the Forest Service, the State Foresters in Montana, Idaho, North Dakota, Nevada, and Utah, and the Bitterroot Resource Conservation and Development Council with technical support from the Forest Products Lab.

# INTRODUCTION

## The Fuels for Schools Program

The Fuels for Schools Program is an innovative venture between public schools, State Foresters and Regional Foresters of the Northern and Intermountain Regions of the Forest Service. This program helps public schools retrofit their current fuel or gas heating system to a biomass heating system, significantly reducing heating costs. The Darby School District in Montana is up and running and creating a lot of buzz in the intermountain west! Interested schools are springing into action in Nevada, Idaho, North Dakota, and Utah.

### ▶ The Way it Works



**Select Demonstration School**  
Schools with financial need close to forested lands needing thinning.

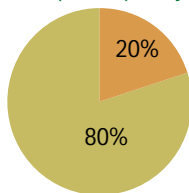
**Fund Engineering Assessment**  
Federal-State partnership conducts due diligence to assist businesses and schools in making final decision.

**Cost-share Grant to Construct System**  
Federal-State investment stimulates private innovation through grants.

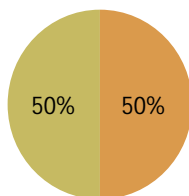
**Dense Forest**  
Focusing on restoring healthy forests in mixed ownerships.

**Thin Urban Interface**  
Prioritize thinning near homes to reduce fire risks to communities.

Phase 1 (Demo) 1-2 years



Phase 2 (Concept Expansion) 3-6 years



### Goals of the Three-Phase Program

- Goal is to establish at least one demonstration project in each of the five states – Montana, Idaho, Nevada, Utah, and North Dakota – by 2005. These demos will gather monitoring data, be the model for future schools, and host tours for interested groups.
- Goal is to facilitate the expansion of the program to 50 schools between 2005 and 2008. Interested schools would be required to compete for federal funding at a maximum federal investment of 50% of total cost. Other funding sources exist and may be used to leverage the Forest Service's investment.

■ Forest Service Investment ■ School Match

# The Public Investment - A Catalyst

Investing in demonstration schools is the first step in the three-phase business outlook. The goal of this program is to stimulate interest and knowledge in a renewable energy heating source that has been operational for over 20 years in the northeast. The Forest Service offers cost-share funds to catalyze these demonstration projects. These projects showcase the economic and environmental feasibility of the Fuels for Schools program. Ideally, by 2009, there would be at least 50 schools with biomass heating systems in place. By then the private sector knowledge and infrastructure will be in place to support the growing interest, and the Forest Service's financial investment would end.



**Chip Waste Wood**  
Waste wood is removed to reduce wildfire risks in forest.

**Blow into Truck and Haul**  
Local contractors are employed.

**Heat School**  
Public schools save 45 – 75% of heating costs with clean technology.

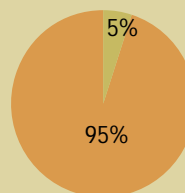
**Savings**  
Schools can redirect valuable resources to education.

A Comment from Jack Troyer,  
Intermountain Regional Forester

“Recent fires have threatened our communities and impacted our economies. In the future, we must be more aggressive in our treatment of hazardous fuels in our forests. The Healthy Forest Restoration Act provides us with some great new tools for treating those hazardous fuels. As part of doing the job we must find productive uses of the biomass so that it can contribute to our economy while keeping our air clean and free of smoke. Fuels for Schools meets all of these needs. I am proud we are part of that effort.”

- Goal is to transition the Forest Service out of the primary funding role. By this phase, school awareness and demand will begin to drive the program. The private sector will have the knowledge and capacity to meet the demand. Both will be skilled in working with non-profits. Other sources of funding – private, state and federal, non-profits – will spur growth. The Forest Service will continue to provide technical support as needed.

Phase 3 (Federal Exit) 7+ years



A Comment from Rick Scheele,  
School Maintenance Supervisor  
and Darby Mayor

“I feel like the Forest Service really did something awesome here. They didn’t just spend over half a million dollars – **they made a huge breakthrough.** We have industry, environmentalists, and the community saluting what we’ve done.”

A Comment from Gailyn Messersmith, President of Messersmith Manufacturing

“My company has been doing work in schools for over 16 years now. We’re very pleased to see western schools becoming interested. These systems burn so clean that usually only water vapor is seen rising from the stack. And it is certainly better to burn biomass cleanly in our boilers than to burn it in wildfires – where the air quality is so impacted. **This program is good for schools, it’s good for business, and it’s good for the land.**”



# PHASE 1

The first phase of this program - the development of demonstration projects - is well underway.

## A Demonstration Story

The Darby School District Demo in Montana – 82,500 square feet with 550 students – converted their three schools from fuel oil to biomass heat energy. Darby saves \$34,000 per year in heating costs.

Each school has its own unique system of needs. Therefore, cost-saving opportunities vary by type of fuel replaced, cost of the fuel, local heat loads, and other factors. Engineering assessments to date show cost savings ranging from 45% when converted from natural gas to 75% when converted from fuel oil.

The Darby Demo Project requires about 500 tons of woody biomass per year.



500 tons of chips = 20 truck loads



Every five days, Darby burns about 15 tons of wood waste which creates **ONLY 10 gallons of ash.**

Over a 20-year period, Darby alone will have cleaned up 1,000 acres of hazardous fuels.

# PHASE 2

The program is sparking interest. Once demonstration schools are in each state, the competitive granting process will be initiated, helping to reach the goal of 50 schools by 2009.

## Program Expansion

The Darby School District is receiving numerous requests for on-site tours from interested groups. Five more engineering assessments have been completed and between 12 and 17 school sites are in the pipeline. In Montana, the communities of Philipsburg, Eureka, and Victor are in the project design phase with construction scheduled for the summer. Other Fuels for Schools demonstration sites have been identified in Bottineau, North Dakota; Bonners Ferry and Council, Idaho; and Ely, Nevada. Once these demonstration projects are in place, the next step is to announce the start of the competitive granting process.



## Clean Technology

More than ever, businesses and natural resource agencies have been held accountable for how their work impacts people and the environment. The biomass heating systems used in the Fuels for Schools use clean technology. These systems are not remotely like your old wood stove! Biomass, when burned in these modern high tech boilers, shows significantly reduced emissions when compared to an uncontrolled forest fire. Emissions are also less than those produced from fuel oil systems. Water vapor is the only visible exhaust.

When compared to the impacts of open burning, the biomass heating systems produce less of everything:

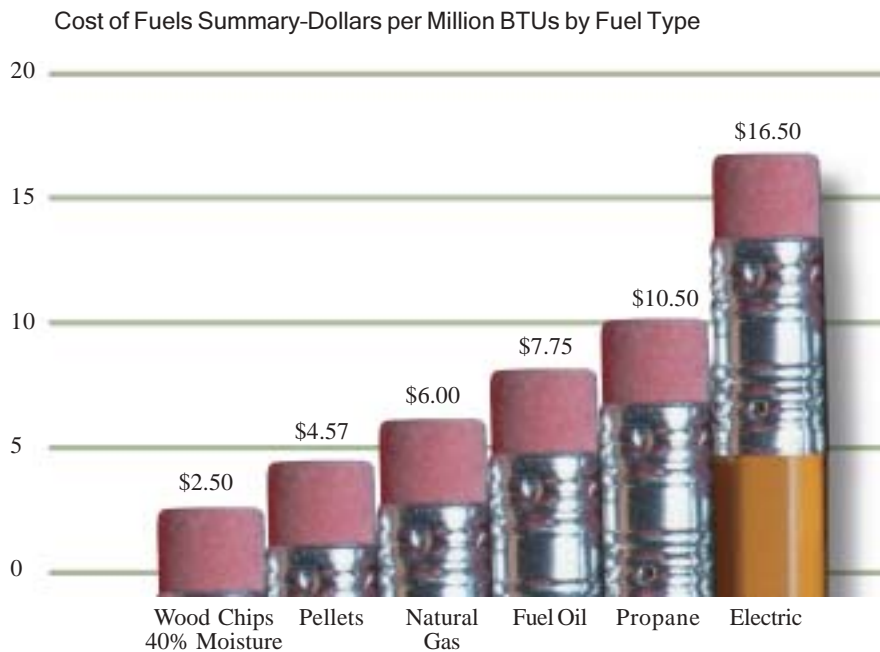
- Less than 3% of the particulates and methane.
- Less than 5% of the carbon monoxide.
- Less than 40% of the nitrous oxides.

A Note from the Center for Disease Control in the 2003 Fire Safety Fact Sheet

“Smoke from wildfires is a mixture of gases and fine particles...that can hurt your eyes, irritate your respiratory system, and **worsen chronic heart and lung diseases.**”

## Cost Comparisons

Renewable energy sources will diversify our Nation's energy portfolio. And it's important to create those choices.



## Millions of Tons of Biomass in Need of Removal

A report by the USDA Forest Service, Research and Development in April of 2003, indicates that, of the areas accessible for treatment, there are 345 million bone dry tons of biomass in the 15 western states.



To picture what 345 million tons looks like, imagine 13.8 million truck loads that, when placed end to end, would circle the world about seven times. Put another way, this is enough waste wood to heat 1000 schools like Darby for 690 years!

# PHASE 3

The program is on track to become self-sustaining enabling the Forest Service to transition to a technical assistance role. Businesses and schools will have the information to design and fund the biomass heating systems. Data from the demonstration schools will provide solid technical and financial benchmarking information, aiding their decision process.

# CONCLUSION

## The Time is Right

Any business opportunity must assemble a plentiful resource, a needy customer, and a ready workforce. Fuels for Schools is a ripe investment for land managers, schools, and businesses.

- Federal and private landowners need to dispose of tons of thinned, woody debris. It costs to dump this material, and it is too dangerous to burn all of it from an air quality and safety standpoint.
- School budgets are declining and operating costs are increasing.
- Biomass heating industries – manufacturers, engineers, and banks – are expanding into western markets.
- The Healthy Forest Restoration Act, signed into law in 2003, is a clear statement of federal policy that the government will expedite the removal of excess woody biomass. The draft Energy Bill proposes a variety of incentives for the removal of woody biomass, as does the 2002 Farm Bill's section on Rural Renewable Energy.



## Benefits for Everyone

- Less waste matter creating wildfire risks to people and the forests.
- Schools are able to hire more teachers from reduced heating costs.
- Landowners have lower costs because now, markets exist for the waste wood.
- Safety of our firefighters is increased.
- Increased forest health.

A Comment from Winston Wiggins, Idaho State Forester

“It is good resource management and good government to find productive uses of excess forest biomass. The Fuels for Schools program is one of those key uses and is a constructive partnership between schools and forestry. The value of heating schools with biomass will last for many years into the future.”

A Comment from Dan Stevenson, Engineer for CTA Architecture

“Our company loves this concept. We think it’s a viable business, and we think it’s the right thing to do for our forests and our schools. **We’ve invested our own time and money into this effort.** New technology can take time before it becomes adopted. We think the Forest Service cost-share is an important incentive that will move the concept forward much more swiftly, generating both interest and savings.”

# Partners and Stakeholders

## Federal and State Forestry Partners

- USDA, Forest Service – Northern and Intermountain Regions, State & Private Forestry
- State Foresters:
  - North Dakota State Forest Service
  - Idaho Department of Lands
  - Nevada Division of Forestry
  - Montana Department of Natural Resources and Conservation – Forestry Division
  - Utah Department of Natural Resources, Division of Forestry, Fire and State Lands
- USDA, Forest Service – Forest Products Lab

## Non-Profit Partners

- Bitterroot Resource Conservation and Development District

## Montana School Districts

- Darby (elementary, middle and high school are all heated)
- Victor
- Philipsburg
- Eureka

## Nevada School District

- White Pine County

## North Dakota

- Minot State University – Bottineau campus

## Idaho School Districts

- Council
- Bonners Ferry

## Private Sector

- Boiler manufacturers
- Engineering firms
- Architectural firms

## For more information:

### Call:

USDA Forest Service, State & Private Forestry  
406-329-3134

### State Forester offices:

Montana 406-542-4303

Idaho 208-666-8632

Nevada 775-684-2507

North Dakota 701-328-9945

Utah 801-538-5504

### Visit websites:

[www.fuelsforschools.org](http://www.fuelsforschools.org)

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