

Documented emission reductions from uncertified wood stoves to EPA-certified wood stoves

Description: Replaced old wood stoves with EPA certified wood stoves that resulted in fewer exceedances of the PM_{2.5} Daily design values.

Title	Replacing Wood Stoves with Newer Cleaner Wood Stoves
Location	Seeley Lake, Missoula County, Montana
Population/Number of homes covered by project	<ul style="list-style-type: none"> • Population around 1,600 people • Several bears • Lots of deer with an occasional moose
Objectives	<ul style="list-style-type: none"> • Replace 154 wood stoves in Seeley Lake by January 1, 2014. • Reduce the number of days that exceed the PM_{2.5} 24-hour National Ambient Air Quality Standard. • Upgrade stove installations to meet current codes and reduce fire hazards from sub-standard installations and creosote buildup. • Educate the public on how to operate their wood stoves in a clean efficient manner.
Milestones	<ul style="list-style-type: none"> • 60 stoves replaced in Phase I by March 20, 2013. Phase I was a low-income area with the highest winter residential wood smoke levels in the community. • By September 2013, over 154 old wood stoves were replaced in the Seeley Lake Community • By November 2013, 164 old wood stoves were replaced. • Education on how to burn cleanly was provided with each stove installation.
Budget	<ul style="list-style-type: none"> • Direct cost for wood and pellet stove purchase and installation - \$477,149.00. • Contracted Services - \$20,000.00 • Indirect Match Approximately - \$27,800.00
Funding Sources	<ul style="list-style-type: none"> • Glacierland Grant from Forest Service - \$285,000.00 • Supplemental Environmental Program - \$130,925.00 • The Steele-Reese Foundation - \$25,000.00 • Customer Contributions and Scrap Recycling - \$52,185.00 • Missoula City-County Health Department - \$20,000.00
Partners	<ul style="list-style-type: none"> • U.S. Forest Service, Department of Agriculture • Glacierland Resource Conservation and Development, INC. • U.S. Environmental Protection Agency • Missoula City-County Health Department • Missoula County

Title	<p>Replacing Wood Stoves with Newer Cleaner Wood Stoves</p>
	<ul style="list-style-type: none"> • Montana Department of Environmental Quality • Seeley Lake Community Foundation • Seeley Lake Fire Department • The Steele-Reese Foundation • Axmen Missoula
Incentives Offered	<ul style="list-style-type: none"> • Vendors paid directly by the Missoula City-County Health Department. Most people got the stove and installation for no charge. • Program prioritized the low-income Phase I neighborhood first. • Before installation, vendors were told how much the Department would pay for each stove and installation and the customer directly paid the vendor for the amount not covered. This was not a voucher program; vendors performed the upfront cost estimate and then the Department stated how much the program would cover.
Ordinances/Regulations	<ul style="list-style-type: none"> • All stoves were professionally installed by a vendor. • Safe installation inspections by the County Building Department were required.
Project Yardstick	<ul style="list-style-type: none"> • By November 2013, 164 old wood stoves were replaced. 16 replacements were pellet stoves, 148 replacements were wood stoves. • Several existing stoves were repaired as part of the program. • With each installation, owners received individualized education on how to use their new appliance efficiently and how to burn clean.
Outreach/Marketing	<ul style="list-style-type: none"> • Open house at the Seeley Lake Fire Station • Missoula City-County Health Department staff promoted change out program at local festival. • Missoula City-County Health Department staff promoted the change out program and asked for project input at several monthly Seeley Lake Community Council meetings. • Missoula City-County Health Department staff met with local business leaders and the Seeley Lake Community Foundation to ask what Seeley Lake residents needed and what was the most effective way to promote the change out program. • Flyers and posters were distributed around the community. • Post cards were direct mailed to a targeted audience. • Local weekly newspaper, The Pathfinder, promoted the wood stove change out program several times.
Air Quality Data/Other Results	<ul style="list-style-type: none"> • Before the wood stove change out program, Seeley Lake exceeded the daily PM_{2.5} standard of 35.4 µg/m³ over 50 times each winter. • See figure below this table showing the differences.

Title	<p>Replacing Wood Stoves with Newer Cleaner Wood Stoves</p>
	<ul style="list-style-type: none"> • Since the wood stove change out program started, Seeley Lake, on average, has exceeded the daily PM_{2.5} standard of 35.4 µg/m³ less than 15 times each winter. • The winter of 2018-2019 had zero days over the daily PM_{2.5} standard. • Winter PM_{2.5} monthly averages declined after the change out program started.
Lessons Learned	<ul style="list-style-type: none"> • Including the local fire department was huge in getting community acceptance for the program. • A process where the vendors submitted a stove change out estimate to the Department directly worked very well. The process felt like a normal commercial purchase to the customer. • Setting a dollar amount per stove that was sufficient to cover the cost of a good stove that met the needs of the participants helped garner enthusiasm for the project. • We did not require participants to provide income or financial information. This likely helped community members feel comfortable working with us. • We would have liked to have had tighter emission standards for the stoves we allowed in the project area. If we were to do it again, we would have limited the stove choice to devices with lower emissions. • We maintained as low a profile as possible, and relied on vendors, the fire department and community partners as our main points of contact for participants. This helped avoid framing the effort as a purely "government intervention." • Community partners, including local employers, community leaders and the fire department helped carry our messaging and garner support in the community. • The phased approach meant we had the resources on hand to meet the need in our highest priority area, and success replacing those stoves helped us secure grants to purchase stoves for the succeeding phases. • Over 60 stoves were replaced in Phase I with an area less than 0.25 square miles. Phase I pollution levels were reduced by the wood stove to wood stove change out program, but we continue to see excessive particulate pollution. This is the one part of the project that could have been improved. With the technology available, a wood stove to wood stove change-out program could not solve the problem. To solve the problem, other measures such as fuel switching, better fuel, improved user behavior, or better wood stove technology that can adjust for wet fuel or operator variability is needed.
Project Contact	<ul style="list-style-type: none"> • Benjamin Schmidt • Missoula City-County Health Department

Title	Replacing Wood Stoves with Newer Cleaner Wood Stoves
	<ul style="list-style-type: none">• 406-258-4755• bschmidt@missoulacounty.us

