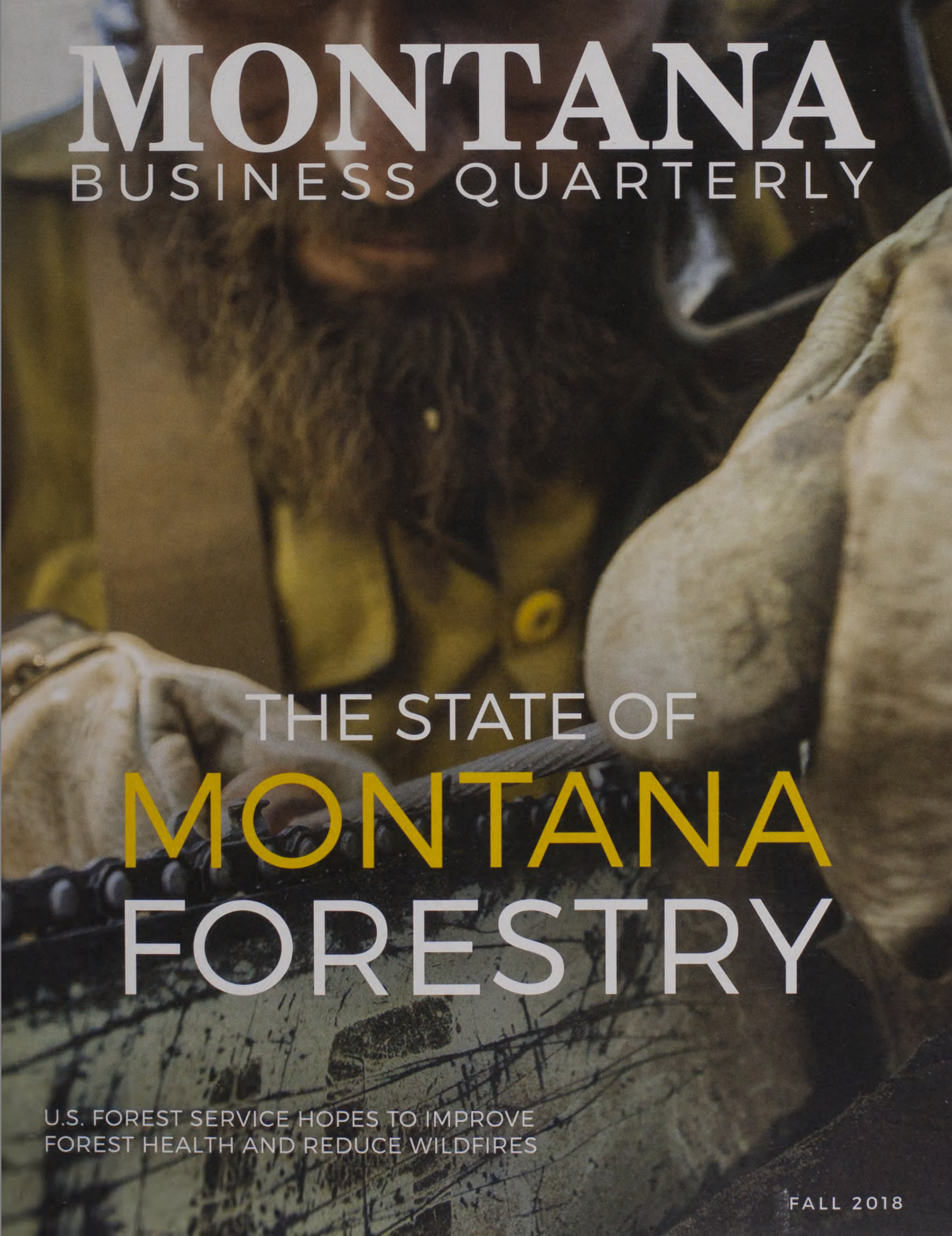

MONTANA BUSINESS QUARTERLY

THE STATE OF MONTANA FORESTRY

U.S. FOREST SERVICE HOPES TO IMPROVE FOREST HEALTH AND REDUCE WILDFIRES

FALL 2018

MONTANA
BUSINESS QUARTERLY

FALL 2018
ISSUE 56 NUMBER 3

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The *Montana Business Quarterly* (ISSN0026-9921) is published four times a year and is a service of the University of Montana. Contents reflect the views and opinions of the authors and do not necessarily represent those of the Bureau of Business and Economic Research, the College of Business or the University of Montana.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

The Bureau of Business and Economic Research has been providing information about Montana's state and local economies for 70 years. Housed on the Missoula campus of the University of Montana, the bureau is the research and public service branch of the College of Business. On an ongoing basis the bureau analyzes local, state and national economies; provides annual income, employment and population forecasts; conducts extensive research on forest products, manufacturing, health care and Montana KIDS COUNT; designs and conducts comprehensive survey research at its on-site call center; presents annual economic outlook seminars in cities throughout Montana; and publishes the award-winning Montana Business Quarterly.

COVER
Clyde Carroll, U.S. Forest Service forestry technician, sharpens the teeth on a chainsaw. (Alamy, Archistoric)

INSIDE COVER
Jim Barnam, owner of the B&J Sawmill in Reed Point, Montana, walks through piles of logs in the sawmill's yard. (AP Photo/Billings Gazette, James Woodcock)

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MESSAGE FROM THE DIRECTOR OF THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

What do people think when they hear about Montana? Parks perhaps, big sky and wide open places. Great fishing and hunting, and of course, our mountains and streams. But do they ever think of business?

Thousands of us do. But truth be told, more business people come here to enjoy the natural beauty of our state than to make business deals. I remember Steve Ballmer, the former CEO of Microsoft, pacing the stage at the 2010 Economic Development Summit in Butte, saying this was the first time he had ever been to Montana on business.

But our state has a growing and successful business sector that continues to thrive in the current economic environment. One of our most prominent employers is one that Mr. Ballmer and countless other visitors interact with – the tourism and recreation industries.

As readers of the Montana Business Quarterly can attest, our world-class manufacturers, health care facilities, high-tech companies and natural resource industries have an economic footprint that is larger than our state. In this issue of the Montana Business Quarterly, you'll read a little bit more about some of those important pieces of our economy.

I hope you enjoy reading this issue.

Patrick M. Barkey
Director
Bureau of Business and Economic Research
University of Montana

SYNCHRONIZED GLOBAL EXPANSION

World Economic Outlook Better Than Last Year

BY PAUL E. POLZIN

Almost all regions of the world are now growing. Global economic growth will be about 3.7 percent in 2018, and Goldman Sachs projects it will accelerate to 4 percent in 2019. Global economic conditions are important for Montana manufacturers because several prominent firms operate in the world market, and their exports depend on economic conditions worldwide.

Europe and the Eurozone – Hitting on All Cylinders

With the double-dip recession and debt crisis in the rearview mirror, the EU is projected to post consistent 2 percent real growth over the next few years. Almost all areas are experiencing positive growth, even countries such a Greece and Spain will grow at or above the EU average. The contribution of EU imports to global trade equaled that of the U.S. and China.

Germany remains the growth leader, with France lagging just a bit behind. Conversely, Italy is still saddled with political instability and a debt crisis. Unemployment remains high in certain countries, but it has begun to decline. Rates are still in the 15 to 20 percent range in places such as Greece and Spain but are down from the 25 to 28 percent reported four or five years ago.

The U.K. economy is decelerating, but the collapse predicted by some Brexit skeptics has not occurred. Real GDP growth is down from the 2.3 percent in 2015, but the drop was only to 1.5 percent in 2017. The forecasts for 2018 and 2019 are in the 1.4 to 1.6 percent range. Future Brexit and other trade negotiations are still uncertain and could become rancorous.

Hanging over the entire region is the potential for an energy crises. The unresolved situation between Russia and Ukraine could result in a sharp drop in energy supplies to Europe and a corresponding rise in prices.

South America – Finally Growth is Projected

The South American economy should continue to show modest growth. The Brazilian economy is now growing after

several years of decline, while Venezuela's economy remains a basket case.

Brazil, the largest economy in South America, began to grow in early 2017 after eight consecutive quarters of decline. Brazil's inflation rate has moderated, but price stability remains a problem in other countries. For example, Argentina is projected to have an annual inflation of 13 percent per year for the next decade. Venezuela continues to be plagued by low oil prices, rampant inflation and political instability. The unrest there is spilling across the borders and impacting nearby countries.

Mexico – Moderate Growth Continues

The past 15 years have witnessed a period of economic stability previously unseen in Mexico. The Mexican economy is holding at about 2 percent growth and fiscal policy remains moderate, but a recent hike in inflation to 6.6 percent may be troublesome. The poverty rate remains high and has not budged, and large income inequities persist. By far the biggest future uncertainty is the renegotiation of the NAFTA treaty.

India – Temporary Slowdown Over

Economic growth in India is projected to strengthen to more than 7 percent, surpassing China in 2018 and 2019. The economy was temporarily slowed by the imposition of the Goods and Services Tax (GST) and monetary restructuring designed to choke off the black market economy. In the long-run, the GST will simplify the tax system and promote growth.

China – Data Uncertainties

Reliable economic data for the Chinese economy remains problematic. Data and analyses from a number of sources place real GDP growth at slightly above 6 percent per year. The red hot housing market has cooled somewhat and bank lending has continued to grow unabated due to lax regulatory controls. But the resulting bad loans could trigger a credit crisis or even worse, a recession.

Japan – Steady as She Goes

Growth picked up to 1.5 percent in 2017, but is projected to remain close to 1 percent in 2018 and 2019 as export growth remains robust. Government debt poses a serious risk. It stood at 220 percent of GDP, the highest ever recorded in an OECD country.

Canada – O Canada!

Canada had above potential growth of about 3.1 percent in 2017, having weathered the oil price shocks and mild currency strengthening. The projections are for about 2 percent growth in 2018 and 2019, less than the 2017 figure but more in line with the long-run potential growth. Canada, like the U.S., is close to full employment and wages are accelerating. The housing market may soften a bit as interest rates move higher.

United States – Slow Growth Continues

The good news is the U.S. economy continues to strengthen. The bad news is that it is not strengthening very much. Real GDP grew 2.3 percent in 2017 and projections for growth in 2018 and 2019 are just 2.6 percent and 2.8 percent, respectively.

Additionally, the length of the current economic recovery is a worry. The cyclic trough from the Great Recession was in 2009 and the economic upturn is now the second longest since World War II. Recessions continue to be surprise events because all attempts to predict them have reliably failed. There will be another recession, we just do not know when.

Even though the recovery has been slow and halting at times, the U.S. economy has returned to full employment. This suggests that renewed inflation is becoming more of a concern for economic policymakers and the U.S. Federal Reserve will probably continue raising interest rates in response.

U.S. manufacturing has been a bright spot during this recovery. Lower oil prices and an abundance of cheap natural gas have kept costs low and provided opportunities for new products and production facilities. Renewed worldwide growth could provide more robust markets for manufacturing exports, but the current threats of tariffs and likelihood of trade wars cloud the outlook for manufacturing exports.

Montana – Riding the Wave

In Montana, agricultural producers have been battered by low prices and drought. An uptick in oil prices during mid-2017 could hold some promise. Extraction costs in the Bakken oilfields are relatively low compared to elsewhere in the world and only a modest but sustained increase in oil prices could stimulate activity in eastern Montana and western North Dakota. Montana's wood products industry is no longer hemorrhaging. Overall, Montana is projected to grow 2.4 to 2.6 percent in 2018 and 2019, roughly equal to the figures for 2016 and 2017.

Gallatin County stands out as the fastest growing community in the state, with Flathead County a bit behind. Lewis and Clark and Cascade counties have posted modest growth. While Missoula and Ravalli counties have been slow to recover, both are now growing. New and expanded manufacturing establishments are a major factor impacting recent trends in Cascade and Missoula counties.

Montana's manufacturing employment has grown much faster than the nation since the Great Recession. U.S. manufacturing wage and salary employment rose from 11.5 million workers in 2010 to 12.4 million in 2017, an increase of 8 percent. Montana manufacturing employment increased from 16,400 in 2010 to 19,900 in 2017, an increase of 21.3 percent. This strong performance was in spite of permanent closures in the wood and paper products industries.

Summary – Strong Economy but Considerable Geopolitical Risks

Synchronized worldwide growth indicates the rosiest economic outlook in years. But the world is still uncertain and almost all of the risks arise from social or political origins.

We can expect the election of more nationalistic and euroskeptic leaders in the EU, which could derail the European engine of growth and the impacts of Brexit are still unknown. The refugee crisis in Europe is far from over and the perennial instability in the Middle East continues to be just short of explosive. Finally, the tariff war started by President Trump could derail growth around the world.

Paul E. Polzin is director emeritus at the Bureau of Business and Economic Research at the University of Montana.

THE SUCCESSION CRISIS OF BABY BOOMER BUSINESSES

An Opportunity for Aspiring Entrepreneurs

BY MICHAEL BRAUN AND ARNIE SHERMAN

A crisis is brewing in Montana and across the country for business owners in their 60s and 70s. More and more baby boomers are facing a stark reality – no one wants take over their enterprises and the anticipated economic loss could reach well into the trillions of dollars.

In 2002, Joyce Previte was on the road to recovery from breast cancer when she launched Grandma Hoot Products out of Florence, Montana. She began manufacturing and selling her own unique Chow Chow relish condiment throughout the region, picking up the complexities of food product regulations and licensing along the way. Other products would soon follow, including jellies and BBQ sauces. Seeking assistance for her growing venture, she asked her husband Keith to jump on board. The family business started humming with Joyce making Grandma Hoot's products while Keith managed sales, marketing and distribution.

Fast-forward 16 years – Grandma Hoot products can be found on the shelves at Rosauers, Harvest Foods and Missoula's Good Food Store. And Chow Chow has a legion of hardcore fans who won't touch a hot dog or hamburger without the distinctive relish, even eating it straight from the jar. By any measure, Grandma Hoot is a success story.

Yet a year ago, Grandma Hoot nearly ceased operations. Joyce and Keith, now in their 60s, were feeling the physical demands of the day-to-day operations and decided it was time to quit but had no idea how to make an exit. Neither their daughter Molly, a recent Montana State University graduate, nor any of their friends expressed any interest in taking over the business. Lacking any prospects for succession, Joyce was resigned to closing its doors.

Grandma Hoot's predicament is far from unique. In fact, there is a tsunami cresting across the nation of baby boomer-owned businesses that are facing the daunting prospect of closing their businesses. The numbers are truly mind-boggling – according to the U.S. Census Bureau, baby boomers own about two-thirds of all companies (12 million businesses), with more than half deemed to be family enterprises. And this demographic group is exiting the workforce in record numbers at 10,000 individuals daily. Their challenge has been how to successfully hand off their hard-earned legacy.

The succession crisis is even more acute in Montana. The Treasure State has a significantly higher preponderance of family-owned businesses than the rest of the nation. According

to the Family Firm Institute, family-owned enterprises make up approximately 80 percent of all U.S. businesses. That number is believed to exceed 90 percent in Montana.

From Main Street bakeries, liquor stores, cattle ranches and winter wheat farms to Billings-based First Interstate Bank and shipping powerhouse Washington Corporation, family businesses are almost entirely driving our economy. But unlike in larger markets, our region has fewer service providers dedicated to the unique challenges faced by family businesses. Notably absent are family enterprise advisories, family wealth managers, governance specialists and investment bankers who can assist in planning and guiding successful transitions.

In many cases, Montana's family-owned businesses are left to fend for themselves. Some have been successful, such as Butte-based Markovich Construction, which is now in the hands of the third generation, while others have secured business continuity by selling to Montana-based buyers. Just a few years ago, Murdoch's Ranch & Home Supply, owned by Dave and Suzanne Peterson, merged their business of 30 years with Missoula-based Quality Supply. In the process they secured the jobs of more than 160 employees.

FAMILY-OWNED ENTERPRISES MAKE UP APPROXIMATELY 80 PERCENT OF ALL U.S. BUSINESSES. THAT NUMBER IS BELIEVED TO EXCEED 90 PERCENT IN MONTANA.

Then there are the more creative attempts. This past December, the sisters behind Woods Bay Grill near Flathead Lake announced a contest where the winner of a 300-word essay, along with $150 entry fee, would secure ownership of their restaurant.

This crisis may well mark the end of an era for many Montana family businesses. With the vast majority of family business owners lacking a viable succession plan, the likelihood of eventually closing is growing every day.

Yet there is a silver lining – this crisis is opening the door to an unprecedented opportunity for budding entrepreneurs. Buying a baby boomer business is often a vehicle to earning a better living. Alternatively, for urban dwellers seeking to start a new life far from the big city, taking over a successful family business can be a means to integrate into a Montana community.

In both instances, the acquisition of a business with a transparent track record and existing customer-base is significantly less risky than starting something from scratch. This is especially true for next-generation owners. They can work alongside the business' previous owners during the transition phase, while also infusing it with the latest management practices and a renewed vitality and mission.

Fortunately for Montanans, there is help on the way. Family Business Partners (fambizpartners.org) is a community-based organization focused on providing family-owned businesses with education, knowledge and resources specific to their needs. Its mission is to provide guidance and access to relevant support services necessary to protect not only their hard-earned legacy, but preserve and expand the jobs they have brought to Montana's economy.

Which now brings us back to Grandma Hoot. This past spring, Taka and Melissa Kagiyama, a couple in their early 30s, purchased Grandma Hoot Products. With Joyce and Keith close by to answer any questions, Taka and Melissa are busy putting their own imprint on the business including a name change – Key to the Mountain, a direct translation from Taka's Japanese last name.

Keith Previte is pleased someone eventually came along to preserve their legacy saying, "We are happy for them and glad they are keeping it alive."

Michael Braun is a professor in the department of management and marketing at the College of Business at the University of Montana. Arnie Sherman is an entrepreneur who hosts Montana Public Radio's "Can Do: Lessons from Savvy Montana Entrepreneurs."

THE STATE OF MONTANA FORESTRY

U.S. Forest Service Hopes to Improve Forest Health and Reduce Wildfires

BY DORIAN SMITH, STEVEN HAYES AND KATE MARCILLE

For decades, Montana's largest manufacturing sector was wood products, as measured by the number of employees. Today, that position belongs to fabricated metals, with wood products falling to second and food products close behind. It's a sign of dramatic change for a state known for its ties to the forest industry and its 20 million acres of productive, non-reserved timberland.

In 2000, wood and paper jobs were 28 percent of the state's manufacturing employment and 31 percent of labor income. In 2016, only 13 percent of jobs and 11 percent of income was generated by wood products manufacturing.

The long decline of the wood products industry in Montana began in response to vigorous harvesting from the 1960s through the 1980s. Public campaigns to protect forest habitats, water and soil quality, and endangered species became national news.

In response, the U.S. Forest Service and the Bureau of Land Management drastically reduced timber harvests on federal forests nationwide - nearly every western state was affected. Montana's total timber harvests retreated from 1.3 billion board feet in 1987 to less than 300 million board feet in 2016. In the same time period, lumber production fell from 1.6 billion board feet to barely 500 million board feet, and wood product sales declined from $1.8 billion to less than $565 million.

Over the past 20 years, there has been a major shift in timberland ownership in Montana. More than half a million acres of industrial timberland has been sold and transferred to various state, federal and other nongovernmental or private landowners. Some of this timberland is no longer actively managed for timber production.

As a result, Montana has become a net importer of logs. Today, Montana mills are dependent on logs flowing in from

U.S. Forest Service Smokey Bear sign (Jason Ross) adjacent states and struggle to get enough timber to operate at their full capacity, making it difficult to take advantage of the current booming lumber market.

But a new national forest management strategy introduced by the U.S. Forest Service aims to increase timber harvest levels. The agency is increasing the removal of timber as a means to improve forest health and address fuel accumulation in the face of extreme wildfire seasons.

At the national level, the U.S. Forest Service's timber harvest trend had been increasing incrementally for several years. But in 2018, their budget was reduced by nearly a billion dollars to $4.9 billion.

Acknowledging that 65 to 80 million acres of federal forests nationwide needed fire hazard reduction treatment and restoration, the current U.S. Forest Service budget earmarks $1.75 billion for forest management activities and $2.5 billion for wildland fire management.

This new budget addresses two previous forest management misconceptions: 1) forests left alone grow stronger and healthier and 2) wildfire suppression is sufficient for preventing future fires.

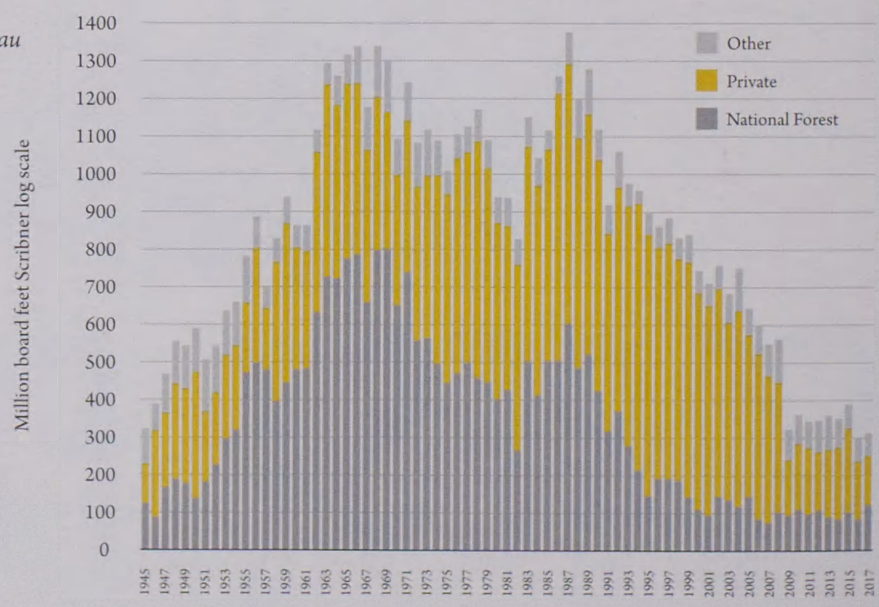
Forest Treatment and Collaboration

For years, forest managers witnessed the decline of forest health as active management decreased. Revenue also declined, which helps pay for other forest management and restoration costs, such as road and culvert repairs, noncommercial thinning, brush disposal or reforestation after fires or insect outbreaks.

During Montana's 2017 fire season, nearly 1.4 million acres of forests and grassland burned. There were 35 fires larger than 1,000 acres, including the Lodgepole Complex Fire, which burned 270,000 acres near Jordan, Montana. The 160,000 acre Rice Ridge Fire on the Lolo National Forest near Seeley Lake was ranked the nation's top wildfire priority that year.

"To decrease the risk of catastrophic wildfires and beetle kill, we are applying several treatment methods: thinning, prescribed fires and timber harvests," said Carol McKenzie, acting director of the Forest Service's renewable resources management for Region 1, which includes Montana, northern Idaho and smaller areas of North Dakota, South Dakota and northeast Washington.

Figure 1. Montana timber harvest by ownership, 1945-2017. Source: Bureau of Business and Economic Research.



As a result, planned timber harvests for Region 1 will increase 55 percent from 321 million board feet in 2017 to an estimated 500 million board feet in 2022. In 2017, 24,000 acres were treated, but the agency recommends treating 40,000 acres annually by 2022. "The Forest Service is increasing the pace and scale of improving forest health on forest lands. We have been talking about this for years, but in the last two years we have become very focused," noted McKenzie.

To achieve these new harvesting goals, the Forest Service is collaborating with local governments, communities, environmental groups and industry. "Collaboration with local communities and environmental groups can help us best achieve the purpose of the restoration projects," McKenzie explained. "With timber as the byproduct, local industry can provide a means to get the restoration done in an economic manner. In places without (forest) industry, it can be very costly to do treatments."

Two years ago, several groups with varying opinions on forest management organized an open forum called the Montana Forest Collaboration Network (MFCN). The group now includes 22 western Montana organizations, including representatives from the wood products industry, county governments, recreational promoters and groups representing conservation, wildlife, landscape and residential interests.

The group sponsors workshops, produces reports and coordinates educational resources. But its real purpose is to help mediate conflicts regarding forest management before they become lawsuits or unwieldy policies. "Collaboration is part of the solution," noted Tim Love, coordinator of MFCN. "We can achieve more success. We bring together science and economic incentives."

He describes it as a push-pull strategy to avoid poor management practices. It also fosters a public reputation for transparency. "We find common ground for the broad diversity of interests. We want to keep forests as forests. It's truly democratic," said Love, a 40-year USFS retiree and forest planning instructor at the University of Montana.

"Nurturing longstanding relationships with the forest industry is not a new concept," said Sonya Germann, Montana's state forester and chief of the Department of Natural Resources and Conservation's Forestry Division.

Figure 2. National forest cut and sold volumes in Montana, 1980-2017. Source: USDA Forest Service, Northern Region.

IN 2000, WOOD AND PAPER JOBS WERE 28 PERCENT OF THE STATE'S MANUFACTURING EMPLOYMENT AND 31 PERCENT OF LABOR INCOME. IN 2016, ONLY 13 PERCENT OF JOBS AND 11 PERCENT OF INCOME WAS GENERATED BY WOOD PRODUCTS MANUFACTURING.

Germann emphasized the economic benefits to forest communities. "It's incumbent upon us to create conditions under which industry partners can make a productive living and carry out a critical role that is understood by everyone."

However, collaboration is not always agreeable for everyone. Julia Altemus, director of the Montana Wood Products Association, said collaboration can settle small and local issues, but it is not as successful negotiating big picture issues, such as road plans. In its quest for common ground, the collaboration process can take a long time, and not every resolution is whole heartedly approved by recreation, environmental and timber interests.

"Collaboration is essential to the forest management process. The work of keeping the public forests healthy is constantly underfunded. You can't go in and restore thousands of acres unless you have a market," said Altemus.

In his 2014 "Forests in Focus Initiative," Montana Gov. Steve Bullock emphasized the importance of wood products markets in a forest restoration strategy. "Montana's forest industry is integral to forest management, watershed restoration, wildfire risk reduction and the overall health of our forests. To ensure a stable integrated mill infrastructure in Montana, we must promote active management of forests and a sustainable timber supply."

Public Perception and New Industry Developments

Altemus believes that the public's love of trees is killing our forests. She has worked on policies and political debates on forest management for more than 30 years. She says that for more than 100 years forest management was guided by fluctuating social and political needs. But when public opinion rallied in defense of endangered species and in protest against perceived poor forestry practices, everything changed.

The longest-running public service advertising campaign in United States history featured Forest Service mascot Smokey Bear. His slogan, "Only YOU Can Prevent Forest Fires" spanned five decades. Unfortunately, Smokey's call for fire suppression was not combined with forest health treatments, such as thinning overcrowded stands, prescribed burning or removing dead and dying trees. Forests were left with a bulging accumulation of flammable material.

Then forests vaulted into national politics in the wake of the 1988 Yellowstone fires, forcing the park's first closure and again after the 2000 fire season, which left 7 million acres scorched, including 2 million acres in Idaho and Montana. Responding to the public shock, President George W. Bush proposed the Healthy Forests Restoration Act of 2003 to reduce the wildfire threat. The law increased timber harvesting and other forest management activities.

Succeeding farm bills increased funding until the 2013-14 budget allocated $500 million for wildfire fighting. It also approved the Good Neighbor Authority, which allowed state and local governments to collaborate in managing federal forests. "Over the past four or five years, more attention is being paid to fire and human safety," said Altemus.

But in the ensuing years, Montana's wood industry lost dozens of mills and thousands of jobs and "the surviving mills don't run at full capacity," she said.

However, the Forest Service's plans to increase timber harvest levels could potentially stimulate Montana's forest products industry. In June 2018, Victoria Christiansen, interim chief for the U.S. Forest Service, told the Senate Committee on Energy and Natural Resources, "Our anticipated level of timber harvest in fiscal year 2018 is the highest it's been in 20 years. In all, this year the Forest Service plans to sell 3.4 billion board feet of timber while improving the resiliency

Kelly Gephardt, owner of Gephardt Post Plant & Sawmill, stands in the sawmill of his Roundup, Montana plant. (AP photo/James Woodcock, Billings Gazette.)

and health of more than 3 million acres of national forest system lands through removal of hazardous fuels and stand treatments." The impact could be significant since national forests account for 62 percent of Montana's timberlands.

This recent commitment to address forest health and increase timber harvest levels is already spurring investment in Montana's wood products industry.

This past year, the Idaho Forest Group (IFG) acquired the sawmill in St. Regis and are already planning on doubling the mill's capacity. The proximity of the mill to Forest Service timberlands was a strong reason for its purchase. "We are already in the same wood basket," said Tom Schultz, IFG's vice president of government affairs.

SmartLam is a rapidly growing producer of cross-laminated timber (CLT) in Columbia Falls. Last year, they expanded their operations and moved to a new headquarters. They plan to hire 75 new employees by the end of 2019. CLT is touted as the high-tech innovation that could revive wood as the preferred material for homes and tall buildings. Buildings with CLT for ceilings, floors and walls need fewer columns and take less time to erect. Plus, the wood does not release high concentrations of carbon dioxide in the atmosphere.

In short, Montana's wood products industry is on the rise once again. While the state's forest industry production may not reach as high as in years past, there are new opportunities and hopes for lasting improvements in the health of our forests and the mills that rely on the timber.

Dorian Smith, Steven Hayes and Kate Marcille are researchers in the Forest Industry Research Program at the Bureau of Business and Economic Research at the University of Montana.

THE FUTURE OF COLSTRIP

The Economic Impact of the Early Retirement of Units 3 and 4

BY PATRICK M. BARKEY

In July 2016, the owners of Units 1 and 2 of the coal-fired Colstrip Electric Generating Station in Rosebud County, Montana, agreed to shut those units down no later than July 2022. The agreement was reached as a settlement from a lawsuit alleging violations of the Clean Air Act brought by the Montana Environmental Information Center and the Sierra Club in 2013. While this agreement said nothing about the future of the two larger, newer generating units in operation at Colstrip since the 1980s, it underscored the seriousness of the challenges for coal-fired power plants in general – and Colstrip in particular – as they face a future of uncertain markets, technologies and policies.

While that future might be in doubt, there is no doubt that the path of actions and policies that frame the future have economic implications that extend well beyond communities such as Colstrip – that is particularly true for a state like Montana. Not only has the significant export of electrical power to neighboring states supported jobs, incomes and tax revenue in our state since the mid-1980s, but the outsized tax contributions of the coal industry to the revenue base of state government gives communities a stake in outcomes affecting Colstrip.

A Bureau of Business and Economic Research (BBER) study released in June 2018 examined the implications for the state economy of the early retirement of the Units 3 and 4 of the Colstrip Electric Generating Station. Early retirement is defined as a shutdown of the two units, which would complete the shutdown of the entire facility, earlier than their physical and economic viability would support. Such an action would be consistent with the goals of environmental groups such as the Sierra Club's Beyond Coal campaign, which advocates the closure of all coal power plants nationwide by the year 2027.

While earlier work by BBER has already documented the economic contributions of Colstrip, the circumstances have changed significantly for coal in general – and Colstrip in particular – since those studies were published. In the new policy landscape of 2018:

The Colstrip Electric Generating Station in Colstrip, Montana. (AP Photo, Matt Brown)

- The closure of Units 1 and 2 by no later than 2022 effectively lowers the economic baseline by which any policy choices concerning the two larger, newer units of the facility will be measured.

- The increased output of renewable energy producers, particularly solar producers, on regional markets has depressed wholesale power prices during the midday period, making it more economical to ramp baseload generators like Colstrip up and down in response.

- Recent changes in federal regulatory policy - including the cancellation of the Environmental Protection Agency's Clean Power Plan, limits on CO2 emissions from power generators and the talk of coal-fired generators as essential to national security - signal a change in direction in the regulatory climate at the national level.

Closer to home in Montana, the policy environment for coal-fired electric generation remains difficult, at least from the point of view of producers. With the prodding of the legislative bodies in their home states, two of the six companies that are co-owners of Colstrip have filed documents that fully depreciate their shares in the facility by 2027 and have agreed to make payments to the Colstrip community to aid its transition from coal.

A Scenario for the Future of Colstrip

With this in mind, it was appropriate to revisit how the early retirement of Units 3 and 4 would impact the economy in the years ahead. BBER's analysis, which was sponsored by the Montana Chamber Foundation, considered two futures for the state economy. The baseline projection considered the economy with Units 3 and 4 continuing to operate out to the year 2043 – purchasing coal from the adjacent Westmorland Energy and serving the markets and customers as it has since its construction.

The early retirement scenario considered the path of the economy if the two remaining units were shut down in year 2027. The difference in jobs, income, economic output and other economic activity measured between those two projections is the economic impact of early retirement.

What would an economy without Colstrip Units 3 and 4 look like? We can answer that question by first considering the changes that the closure would bring about. These changes fall into three basic categories:

- **Closures.** The jobs, production, vendor purchases and tax payments of the generating plant itself are lost in the early retirement scenario. The same is true for the adjacent coal mine, since that facility lacks access to transportation links to ship its product elsewhere.

- **New investments and spending.** The early closures at Colstrip would necessitate some new generation and/or transmission investments to replace lost capacity, generating construction activity and jobs. There would also be spending on remediation for the sites.

- **Market impacts.** A reduction baseload capacity of nearly 1,500 megawatts from regional energy markets could be expected to impact wholesale electricity prices, particularly for larger Montana customers who have purchased their power on the open market.

To say there are plenty of moving parts in this scenario would not be an understatement. That itself is an important finding. Colstrip Units 3 and 4 have been part of Montana's energy infrastructure since the early 1980s, and their removal from the grid leaves a void that is not easily filled. The scenario built up in the BBER study attempts to faithfully represent the scale and nature of these changes. But the actual events that could occur in an early retirement scenario will in all likelihood be different. Changes in technology, market conditions and economic growth virtually ensure that.

As an example for replacement investment, the closure of Units 3 and 4 would represent a loss of 220 megawatts of capacity that is dedicated to Montana customers. What could replace this capacity? The study ultimately landed on one particular option – the construction of 220 megawatts of new natural gas-fired reciprocating internal combustion engine units, positioned in two or three different places in the state. With today's technology and market conditions, this option most economically addresses the need for dispatchable, rampable, flexible power generation that the loss of Units 3 and 4 would create.

Better energy storage technology, higher natural gas prices or changes in power demand could change this choice, in favor of renewables or something else. But the spending and employment included in this scenario serves as a useful depiction of the investment that needs to take place, even if the actual investment is in something else.

The Economic Impact of Early Colstrip Retirement

As extensive as the changes described above, they are only part of the picture. As with any economic event, changes in employment, income, spending and other dollars present a

Table 1. The economic impact of the early retirement of Colstrip units 3 and 4, summary. Source: Bureau of Business and Economic Research.

Category	Units	Impact for the year		Full period*
		2028	2043	2028-43
Total Employment	Jobs	-3,078	-2,840	-3,280
Personal income	$ millions	-253.2	-348.6	-5,233.9
Disposable personal income	$ millions	-218.3	-305.3	-4,559.2
Selected state revenues	$ millions	-60.5	-81.7	-1,242.5
Output	$ millions	-700.4	-779.4	-12,503.3
Population	People	-1,715	-7,016	-5,960

* *Full period impacts for employment and population are averages of the annual impacts, 2028-43. Full period impact for income, output and revenues are the sum of the annual impacts.*

THE RESULTS OF THE ANALYSIS SHOWS THAT THIS EARLY RETIREMENT WOULD PRODUCE A STATE ECONOMY WITH FEWER JOBS, LESS INCOME, REDUCED STATE TAX REVENUES AND FEWER PEOPLE THAN WOULD BE THE CASE IF THE FACILITIES REMAINED OPEN.

stimulus to the economy to which workers, families, businesses and governments react. The study traced these reactions and compared the new resting point for economic activity in the wake of Colstrip's early retirement to the baseline projection.

The results of the analysis shows that this early retirement would produce a state economy with fewer jobs, less income, reduced state tax revenues and fewer people than would be the case if the facilities remained open. Specifically we find that the early retirement of Units 3 and 4 at Colstrip produce a state economy that:

- Has on average almost 3,300 fewer jobs over a 16-year period (2028-43) following the closure, with average earnings of $79,000 for each lost job.
- Reduces the income received collectively by all Montana households by $325 million per year, adding up to $5.2 billion over the 16-year span.
- Experiences lower state tax and nontax revenue collections on the order of $80 million per year.
- Has a population loss of 7,080 people by year 2043, including almost 2,200 school-aged children.
- Sees reduced economic activity in every region of the state due to higher electricity prices, reduced inter-region trade and lower state government spending that would occur.

How do the changes that directly affect roughly 800 jobs at the generating station and the adjacent mine contained in a few square miles of land in Rosebud County produce such outsized effects? One reason is the nature of the jobs and the production activities associated with coal-fired electricity generation. The jobs pay more than the average, reflecting the highly capitalized, high value-added nature of their work. Unlike many other businesses, the Colstrip facility spends an enormous portion of its budget on a made in Montana product, namely coal. And it exports most of that product to buyers in other states.

A second factor amplifying the impact of Colstrip is the facility's role in the electric power grid. While technology and competition – some of which is supported by subsidies – have changed its once exclusive use as a baseload generation resource, it remains an asset whose removal would require new investment that entails costs.

A third factor is the outsized role of energy and natural resource activities on the revenue base of the state of Montana. In a state with no general sales tax, that by necessity relies more on property taxes (which largely go to local governments) and natural resource taxes, an industrial facility the size of Colstrip represents a sizable source of government support. BBER estimates that Montana's special taxes on energy and natural resources make the tax impact of Colstrip's early closure at least a third larger than they would be on a non-energy related business.

The last factor to mention is the product produced by Colstrip – reliable, baseload electrical energy. Policies or actions that produce higher electricity prices are felt across nearly every productive sector of the economy.

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