

A Strategic Economic Development Plan for
The Town of Saratoga, Wyoming

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Executive Summary

The Saratoga Strategic Economic Development Plan was commissioned by the Town of Saratoga, Carbon County, Impact Joint Powers Board. The basic purpose of the plan is to initiate economic development actions that produce year round jobs in Saratoga, WY. The plan can also be useful to the Town of Saratoga applying for state and federal funding for infrastructure, community improvements and specific business projects.

The project's scope of work included the following tasks: 1) Review all recent economic development work related to Saratoga, Wyoming; 2) Conduct a timber study focused on the feasibility of a sawmill operation in Saratoga; 3) Contact Intermountain Resources LLC regarding its plans and intended use of the sawmill site; 4) Identify opportunities to attract private business (not necessarily connected with timber, tourism or recreation) if the mill site is not used for a timber operation; 5) Explore the possibility of developing and marketing an industrial park on town-owned property at the municipal airport; 6) Identify and prioritize other economic development projects that Saratoga might pursue; and 7) Develop a plan for a Wyoming Business Ready Grant (BRCG) application.

NorthStar Economics, Inc. reviewed several professional economic development studies prepared earlier for the Great Divide Economic Development Coalition (Sweetwater and Carbon Counties), the USDA National Forest Service, the Carbon County Planning Commission, the Town of Saratoga and the State of Wyoming. In Chapter 2, short summaries of individual key studies are presented.

To complete the timber feasibility study as related to a Saratoga sawmill operation, in chapter 3, NorthStar Economics interviewed a number of forestry and timber industry experts. The experts interviewed are listed in Appendix A. An adequate supply of timber for a Saratoga mill depends on a number of factors. U.S. Forest Service resource policies are primary factors in determining the local area timber supply. Federal forests likely account for between 60-70% of timber availability within a 120-mile radius of Saratoga. Another key factor affecting timber supply is the threat of the mountain pine beetle and the spruce bark beetle – natural infestations that pose serious risks for creating sizeable dying timber stands and wildfire hazards in southern Wyoming.

The USDA National Forest Service appears to be making important modifications to Medicine Bow National Forest (MBNF) resource management policies. Under their planning procedures, the U.S. Forest Service identifies an "allowable sale quantity" of timber production – or ASQ – that would be met by harvesting raw timber from planned management [geographic] area prescriptions. Yet, the U.S. Forest Service warns that "ASQ has not been a reliable predictor of actual harvest levels." Annual federal budgets, project appeals, litigation, market conditions, natural disasters, and changes in national policies affecting resource management all have combined historically to influence timber harvest levels at Medicine Bow and other national forests.

While a steady timber supply is essential, there are other critical factors in determining the feasibility of an on-going sawmill operation in Saratoga. From our interviews, NorthStar Economics concluded that a re-opened sawmill is also dependent upon the Wyoming Colorado Railroad (“WYCO”) not being abandoned, cost-effective new production technologies being brought into mill operations, and the need to rebuild community logging infrastructure that can efficiently extract raw timber product from nearby forests. The planned national forest timber supplies are reasonably promising, and the WYCO rail line abandonment has for now been denied by federal agencies. If the other conditional mill site factors can be met, then NorthStar Economics’ answer to the feasibility question of a Saratoga mill being operable is a qualified “yes”. However, achieving a final outcome of re-establishing the lumber mill is not possible without risk-taking mill operators being included in the mix.

The best possible use for the idle Saratoga mill site would be a functioning sawmill that produces dimensional lumber and other wood related products, i.e., bark mulch, wood chips for pulp, and biomass fuels.

If the Saratoga site is not re-used as a lumber mill facility, then NorthStar Economics recommends several alternative uses are possible that could generate year around employment opportunities. Either the current site owner would need to view these alternatives as part of the company’s long term business plan or more likely, the Town would need to acquire the site and redevelop the property.

As reported in Chapter 4, almost everyone NorthStar consulted thought that the mill site would be otherwise best suited for industrial uses. From site infrastructure standpoints, the roads, sewers, water and electric utilities are industrial grade. The prior sawmill operation provided a good test of the infrastructure being strong enough for many other types of businesses; however, water and sewer line (diameter) upgrades starting at the property boundary may be required for some higher utility use businesses or for multiple businesses that might become attracted to building on the site. The existing buildings appear to be in good shape and might serve one or more other business purposes. The most critical local infrastructure shortfall may be the lack of first-class broadband telecommunications. Other considerations likely to affect potential site re-use are:

- Availability of business entrepreneurs
- Proximity to markets for most businesses
- Access to entrepreneurial capital, such as angel funds
- Availability of skilled labor

The genuinely unique economic asset of the Town Of Saratoga is its general aviation airport, Shively Field. According to the state’s *2004 Report on the Impact of Aviation in Wyoming*, Shively Field is the most active general aviation airport in Wyoming. NorthStar Economics reports (Chapter 5) that the airport is capable of handling all common general aviation aircraft and commercial aircraft as large as a Boeing 737. FAA regulations require 750-foot safety zones on both sides of the paved runway center. Within these constraints, two (2) separate airport sites could accommodate formation of local business parks. One site located north of the runway is an irregularly shaped parcel of approximately 48 acres and could accommodate general business development,

including a proposed Arts & Business Incubator. The other site located on the south side of the runway is a little over 58 acres and might accommodate aviation related businesses. This report presents a map of Shively Field displaying these two sites (Figure D) and offers examples of business activities found at general aviation airports.

NorthStar Economics has four (4) other suggestions for economic development strategies not connected directly with tourism or timber. These suggestions are presented in Chapter 6 and include the following:

- Economic development around the arts
- Economic development around a community center
- Economic development around entrepreneurship and establishing new small businesses
- Economic development around enhanced deal flow

Growing new or expanding arts businesses can add to full and part-time family incomes in an area, while boosting the local quality of life. A community's perceived quality of life becomes important in order to attract creative class workers – the entrepreneurs and professionals who start or staff innovative growing companies.

The Platte Valley Community Center Joint Powers Board has conceived a bold vision for a multi-faceted community and convention center. As envisioned, the newly constructed and renovated facility will host a variety of community functions that should attract numerous outside visitors to the area. This joint community/convention center can supply meaningful economic development services to Saratoga – housing the Chamber of Commerce, group meeting spaces, public Internet terminals, a/v equipment for training programs and classrooms, and access to photocopying, faxing and other business services. The Platte Valley Community Center can become a local vehicle for boosting entrepreneurial endeavors, besides also improving the Saratoga quality of life.

Entrepreneurship development is now recognized as a promising strategy for many rural communities faced with obstacles that make more traditional development approaches less viable. The community-based PACE strategy focuses resources on encouraging local entrepreneurs. To become an “enterprising town”, Saratoga needs to give consideration to: 1) Organizing a local private equity-type capital investment fund, and 2) Launching a 25-40 person community entrepreneurial coalition whose members serve as enterprise facilitators. Such a coalition initiative is known as a Planned Approach to Community Entrepreneurship (PACE) Program. Area residents volunteering for the coalition then work through a community-based board to provide free, confidential, business management and networking advice to aspiring entrepreneurs. If the Town of Saratoga makes entrepreneurial programmatic progress, the Wyoming SBDC State Director has indicated a strong interest in working to locally implement a PACE Program.

The University of Wyoming at Laramie is a remarkable generator of outside research funding. In addition, the Wyoming Business Council and UW launched the Wyoming Research Products Center (RPC), in 1999, to foster in-state technology business development. Serving as the university's technology transfer office, RPC assists UW faculty and private inventors statewide to legally protect ideas and in turn find commercial applications for their technology discoveries. To obtain economic value from

scientific and technology discoveries, also known as intellectual property, there must be a process of protecting, marketing and transferring intellectual property to private companies for commercial leasing purposes, i.e., steps known as tech transfer and commercialization. With RPC offering tech transfer and product licensing nearby, creative economic development opportunities become workable in Saratoga.

The University of Wyoming offers a second opportunity for assisting the Town of Saratoga's entrepreneurial strategies through construction of the Wyoming Technology Business Center (WTBC) in Laramie. Businesses that graduate from the WTBC incubator will need quality business space and may require developmental venture capital to reach their next stages of entrepreneurial growth. Saratoga can potentially offer these resources to WTBC companies and other expanding Wyoming businesses.

In Chapter 7, NorthStar Economics prioritizes this report's basic recommendations. The sawmill is the community's biggest financial asset. Reopening the mill would provide the most immediate economic impact in terms of job creation. The airport project is a longer-term idea but it holds the potential to have a large impact as well. Finally, the acquisition of the mill site and its development as an industrial park would be the third priority. This option would also take some time to realize job gains but would likely be faster than the airport development if it is packaged and marketed effectively.

Utilizing the State of Wyoming Business Ready Community Grant (BRCG) Program for pursuing these three (3) Saratoga site development options is discussed in Chapter 8. This chapter describes the types of grants available through the BRCG Program and the economic development opportunities in the Town of Saratoga that match the BRCG funding criteria. The chapter outlines other studies and data needed to pursue a Business Ready Community Grant including the essential steps required for a labor force availability study which is part of the BRCG application.

CHAPTER 1 - Background and Introduction for the Saratoga Strategic Economic Development Plan Project

The Saratoga Strategic Economic Development Plan (referred to hereafter as “the Project”) was commissioned by the Town of Saratoga, Carbon County, Impact Joint Powers Board. The Project is funded by a Community Development Block Grant administered by the Impact Joint Powers Board.

The purpose of the Project is to develop a strategic economic development plan for the Town of Saratoga, Wyoming. Such a plan would then be used to initiate action on economic development projects that would produce year round jobs in the Town of Saratoga. The plan would also be useful in applying for state and federal funding for infrastructure, community improvements and specific business projects that retain or increase local jobs.

The prime contractor for the Project is NorthStar Economics of Madison, Wisconsin. The principal investigators for the Project are Dr. David J. Ward, President of NorthStar, and Mr. James Patterson, Senior Associate at NorthStar. Mr. Patterson is a Wyoming resident and maintains a home near Encampment, Wyoming.

The contract for the project was awarded in an open bidding process. The Impact Joint Powers Board issues an RFQ or Request for Qualifications in April of 2004. Responses to the RFQ were then screened and qualified bidders were then sent a letter outlining the scope of the project and requesting proposals. The Impact Joint Powers Board received several responses to its Request for Proposals (RFP) and two bidders were invited to Saratoga for interviews. Following the interviews NorthStar Economics was selected to carry out the project.

Scope of the Project

The Town of Saratoga, Carbon County, Impact Joint Powers Board outlined the scope of work for a strategic economic development plan project as part of the Request for Proposals. The scope of work for the Project included the following tasks:

1. Review all recent economic development work related to Saratoga, Wyoming and the surrounding region. Include in the review work done by Mary Randolph and the Wyoming Rural Development Council and a Comprehensive Economic Development Strategy (CEDS) done by Jim Pedersen for Carbon and Sweetwater Counties.
2. Conduct a timber study as part of a study focused on the feasibility of the long-term operation of a sawmill in Saratoga. The feasibility study is to be conducted around the existing LP sawmill site in Saratoga and is to test the feasibility and sustainability of reopening the existing mill or some similar type operation.
3. Contact Intermountain Forest Products with regard to its plans and intended use of the existing PL sawmill site.

4. Identify opportunities to attract private business (not necessarily connected with timber, tourism or recreation) if the mill site is not used for a timber operation.
5. Explore the possibility of developing and marketing an industrial park on town-owned property at the municipal airport.
6. Identify and prioritize other viable economic development projects or activities that Saratoga might pursue.
7. Develop a plan for a Business Ready Communities grant application.

The Project covering the scope of work described above began in July of 2004 and was completed by the end of November of 2004.

In carrying out the study, NorthStar Economics gathered information from various data sources at the state and federal level, and analyzed past reports related to economic development completed by the State of Wyoming, the Carbon County Board of Commissioners, and the Town of Saratoga.

An important part of information gathered included several interviews with national, state, regional and local professionals. These interviews were conducted during NorthStar Economics' visits to Saratoga in June, August, September and November of 2004. The consultant also did an interview with the head of the U.S. Forest Products Laboratory in Madison, Wisconsin in October of 2004. Appendix A in the report is a listing of the people interviewed for this report.

Chapter 2 - A Review and Digest of Economic Development Studies Relevant to the Saratoga Project

NorthStar Economics, Inc. has reviewed several earlier professional economic development studies related to the Town of Saratoga. These were economic reports prepared directly for the Town Saratoga, as well as for Carbon County, the Great Divide Economic Development Coalition (Sweetwater and Carbon Counties), the USDA National Forest Service, and the State of Wyoming, its economy and aviation industry. Each document provides statistical and historic background information pertinent to Saratoga, and offers assorted economic development recommendations.

What follows is a short synopsis of each individual study listed below.

Rural Resource Team Report, Saratoga, WY

Wyoming Rural Development Council
State of Wyoming

A community assessment for Saratoga, WY was conducted by the Wyoming Rural Development Council (WRDC) at the request of the Town of Saratoga, the Saratoga/Platte Valley Chamber of Commerce and the Carbon County Economic Development Corporation. WRDC provided a Resource Team for assisting the town at evaluating local assets and liabilities and for developing suggestions for improving the environment, social and economic future of the community. The WRDC effort was led by Mary Randolph and the resulting report is often referred to as the Randolph report. The WRDC Team toured Saratoga and interviewed approximately 85 citizens, business and community leaders over a two-day period during October 2000.

The WRDC Resource Team provided community-based planning and assessments through interviewing a large number of local people, recording their suggestions, and having the team of experts write up a plan of recommended action for community use. The critical focus of the assessment process remains the community with the team of experts suggesting ways to accomplish the goals recommended by the community.

A Resource Team oral report was presented at a Saratoga community meeting on 3 October 2003 – with a written report submitted shortly thereafter. In addition to WRDC staff, the Resource Team that served Saratoga consisted of professionals from the Wyoming Business Council, UW Cooperative Extension, USDA Rural Development, Bighorn National Forest, and the Wyoming Department of Agriculture. WRDC has now completed 72 community assessments for Wyoming's 97 incorporated towns and cities.

The Resource Team offered several Town of Saratoga recommendations for boosting the general *quality of life* – making the community a more attractive place to live and to work, and improving local potentials for tourism expansion.

For instance, Resource Team recommendations included riverfront hiking and biking paths, improved public facilities maintenance, enhanced community signage (historic, directional, and promotional), neighborhood beautification campaigns, and a competitive blend of civic promotions and community booster contests. Each of these

recommendations can potentially improve community attractiveness and the quality of life in Saratoga.

Besides enhancing tourism opportunities, community improvements can over time increasingly make the town more attractive to outside entrepreneurs and business owners/operators who might consider relocating entrepreneurial activities to Saratoga. Indeed, **quality of life** is a critical modern economic development input for any community striving to achieve increased growth.

Listed below are **all Resource Team recommendations** for Saratoga. Items that appear in bold print are those we judge to be very relevant to the rest of this report and our final recommendations.

- Community promotions – “business of the month”, “resident of the month”, etc.
- Solve telephone directory assistance problem
- Fiber, satellite and cable modem access (E-Commerce and Internet needs)
- Working committee for economic development
- Meeting facility or community center
- **Need to diversify from the “three-legged-stool”, i.e., Agriculture, Tourism, and Timber**
- Conduct a survey of home-based businesses in the community (licensed now in Saratoga)
- **Construction of a business incubator, building it on city owned property (assorted shared services)**
- Youth entrepreneur class or club at the high school level (main ingredient – dedicated mentors)
- Incentives on city owned land along the railroad tracks (low cost leases, outright grants of land, etc.)
- Extend operating hours of the Public Library
- Small business seminars (SBDC)
- Day care/childcare entrepreneurial opportunities (major employers offer as an employee benefit to initiate program)
- Youth Internship programs with employers
- Assisted living facility mentioned several times
- NRF Foundation sponsors a National Small Stores Institute (3 day workshop)
- “Doing the Doable Deals” training session, Federal Reserve Bank of Kansas City
- WBC targeted industry study
- Challenge America Fast Track Grants (support arts projects in rural communities)
- “Making work Work” (Hitachi Foundation)
- Extend the tourism season
- **Tourism is an important opportunity to introduce other business people to the community (getting information to these visiting business people about the desirability of establishing facilities in Saratoga during and after their stay)**
- Light industry and high tech businesses are desirable
- **Look for value-added opportunities for agriculture and timber**
- Focus on retaining existing businesses and helping them to expand
- Multi-dimensional strategies for possible solutions

- Affordable housing for existing workers and workers in firms considering relocating to Saratoga
- Lack of meeting facilities for larger groups (small conferences and conventions)
- A primary barrier for town is distance
- Focus on businesses with high value and/or low weight products
- Look for ways to reduce transportation costs (joint shipments, coordinate shipments to reduce empty backhauls, etc.)
- **Excellent airport (could be better utilized by local businesses)**
- Isolated location may be perceived as an advantage
- High tech firms that use telecommunications to conduct business
- Use the county's 1 percent capital facilities tax
- Recreation, civic and convention center
- Trail System along the river (scenic path to walk and bike for residents and visitors)
- A trail or pathway system (bike trail and walking path becomes part of strategic plan for economic development while reducing traffic congestion and air pollution)
- Tie together Veterans Island, the Hot Springs, Saratoga Lake, and the Platte River (another activity for people, particularly during the evenings)
- Town offers excellent fishing and rafting opportunities
- **Concentrate on small industries, "cottage industries" and 3 to 12 employee businesses**
- Describe as a "pathways" project to allow for broadest possible funding through grants – part of the community transportation system) (a "Pathways Plan")
- **Successful community enterprises in rural America grow from within**
- "Sheridan Pathways Project" called Transportation Alternatives Coalition
- Need for community planning (affordable housing, open spaces, etc.)
- Better inform the community as a whole about tourism – potential impacts both positive and negative
- Encourage cooperation with neighboring communities, and within the surrounding area's private, public and nonprofit sectors
- Hiring a Recreation Director was a good step (but need a "Development, Operations and Maintenance Plan")
- **Prepare a "Community Development Plan"**
- Visitor/User surveys are building blocks for recreation plan and development (surveys may include demographic characteristics)
- We assume that area recreation sites are easy to find
- Do facilities fulfill customer desires
- Data collection assistance from UW Sociology Department and Recreation/Geology Department (graduate students)
- SIGNING – a consistent approach to signing the town's recreation facilities (doing so will portray unified, quality management) (use international symbols and Manual of Uniform Traffic Control Devices – or MUTCD standards of size and color)
- Welcome signs to town (both ends)
- Historic Interpretation – development of a walking tour in the downtown area (share information about settlement of the area, historic buildings, and importance of ranching, tourism and timber industry to the local economy) (Info

- on the Platte River) (studies show visitors are excited about colorful western history) (the City of Buffalo, WY has a similar walking tour)
- Maintaining infrastructure is critical (making a favorable impression – clean facilities are extremely important)
 - Upgrading facilities at Veteran’s Island
 - Forming a union with Albany County for marketing the Snowy Range and its adjacent communities (the benefits of a consolidated marketing program)
 - Youth want some place to socialize
 - Have a Community Wide Clean Up day
 - Have a Christmas Decoration Contest (free lunch or dinner)
 - No supportable family wage jobs, limited retail shopping, lack of support for local businesses, and the aging population
 - Put up signs advertising the community spirit, the natural resources, medical services, etc.
 - Have high school students make up brochures that they deliver to adjacent town (include the Seniors in designing the brochures)
 - USDA/Rural Development offers business loans and grants for community development projects (Rural Business Cooperative Service can assist farmers and ranchers form cooperatives, i.e., user-owned businesses)
 - No affordable low income rental housing nor single family dwellings for low and moderate income workers or for seniors
 - Conduct a needs survey for local housing
 - Town can form a Housing Authority for constructing apartments and for assisted living centers (Town of Sundance has built very successful Senior Citizen Apartments)
 - Need for assisted living for the elderly (needs assessment again) (USDA has community facility loans) (USDA has Congregate Housing and Group Home programs – residential housing consisting of private apartments and central dining facilities)
 - Affordable day care facilities (USDA has the Rural Community Development Initiative)

Comprehensive Economic Development Strategy (CEDS)

*Great Divide Economic Development Coalition of
Carbon County and Sweetwater County*

The Comprehensive Economic Development Strategy (CEDS) was prepared in 2002 under an award from the U.S. Department of Commerce, Economic Development Administration for Carbon County and Sweetwater County.

The CEDS report presents an economic development program for the **Great Divide District** based on regional economic development priorities and goals determined by the Board of Directors of the Great Divide Economic Development Coalition (GDEDC). Through formation of the GDEDC Board and 2-county Great Divide District, Carbon County and Sweetwater County intended to qualify, *for both counties and their municipalities*, for future financial assistance from the U.S. Economic Development

Administration (EDA) under its public works, economic adjustment, and planning programs.

The CEDS preparation is a prerequisite for federal EDA recognition of the Great Divide economic district and for any future applications pertaining to federal financial assistance.

Cooperative partners for pursuing local economic development implementation were identified in the CEDS report: the Carbon County Economic Development Corporation (CCEDC) in Carbon County and the Sweetwater Economic Development Association (SWEDA) in Sweetwater County.

The CEDS report involves an action plan that identifies a wide variety of specific economic development objectives that include a descriptive scope, assignment of responsibilities, and a schedule for completion of each project. The action plan emerged from Pederson Planning Consultants conducting individual discussions with some 30 community leaders who were engaged in assorted local public and private capacities and who identified community assets/issues and economic development opportunities. Similar information was gained from area residents who attended one of eight public meetings conducted around the counties.

The Great Divide District encompasses 18,232 square miles – and has a rich history. The earliest fur traders, explorers and pioneers who were typically migrating to the west coast often used the nearby Oregon, Overland, Cherokee and Emigrant trails. Local settlements of early migrants began to emerge in communities such as Riverside. Construction of the Union Pacific Railroad in 1968 brought new residents and establishment of new communities such as Medicine Bow and Rawlins. Fort Steele was established to protect the Platte River railroad bridge. Cattlemen and sheep herders arrived in the 1870-80s helping form a town at Saratoga.

At the turn of the 20th century, minerals like copper attracted wealthy mining interests to the Sierra Madre Range near Encampment. Sheep herding in Carbon County later diminished significantly by the mid-1950s. Mineral resources such as trona, oil and gas, and coal have continued to be major Great Divide District economic factors.

Carbon County and Sweetwater County generally represent an arid, high desert environment. Alpine trees and vegetation characterize portions of the Sierra Madre and Medicine Bow Mountains. In Carbon County, average annual precipitation levels range from nine to 14 inches.

In Carbon County, there are about 903 creeks, streams, rivers and man-made impoundments. In Wyoming, there are approximately 49 extant native fish and 27 established nonnative fish species. Most of the species occur in the Great Divide district, such as Brown, Rainbow and Lake Trout and Small Mouth Bass. An abundance of wildlife (antelope, deer, elk, mountain lion, etc.) is located in each county – offering excellent opportunities for nature viewing, artistic inspiration, and hunting & fishing.

The resident population of Carbon County included 15,639 persons in 2000 (U.S. Census Bureau), a figure that represented a six percent decline of residents between 1990 and 2000. Much of the decline was precipitated by the closure of coal mines in the Hanna Basin during the mid to late 1990s. Other out-migration was likely the result of a general lack of job opportunities.

In May 2002, the Wyoming Department of Employment estimated that the Carbon County labor force included approximately 8,147 persons. The unemployment rate was estimated to be 4.3 percent. During the third quarter of 2001, 604 employers in Carbon County's private sector paid approximately 4,535 employees an average monthly wage of around \$1,861, or \$22,333 annually. A sizeable number of persons in Carbon County are sole proprietors, or small business owners that have no employees. In 1999, there were 1,074 non-employer business establishments in the county.

The CEDS report measured the relative strength of the Carbon County retail sales market. The extent to which a community captures and loses retail sales from other communities is reflected in the pull factor. A pull factor greater than 1.0 indicates that a community is capturing more retail sales from consumers in other communities than it is losing.

Based on \$99.4 million of retail sales at 208 commercial establishments in 2001, Carbon County had a 0.73 pull factor (Sweetwater County reported 1.07) and therefore experienced considerable retail trade leakage. Carbon County is losing retail expenditures to Casper, Laramie, Cheyenne and Rock Springs (WY) and to Ft. Collins (CO). Retail leakage from Carbon County is meaningfully greater than reflected by the pull factor since a considerable amount of Carbon County expenditures are derived from Interstate 80 truckers, outside tourists and seasonal residents during the fall and summer seasons.

Traversing Carbon County east and west, Interstate 80 is a primary vehicular corridor linking commercial truck and passenger traffic between the east and west coasts of the United States. Citing Wyoming Department of Transportation data (2001), the CEDS report indicated that average daily traffic volumes range from roughly 10,000 to 20,000 vehicles per day, including major trucking traffic.

The Union Pacific Railroad (UPRR) operates in Sweetwater and Carbon Counties offering its freight transportation lines between Chicago and Los Angeles. The Wyoming & Colorado Railroad (WYCO) operates a 23.71-mile line of railroad from Saratoga to near Walcott, connecting with the UPRR interstate rail lines.

Three rural electrical utilities are distributors of electrical power to select portions of Carbon County. Carbon Power and Light – a member-owned rural electric cooperative – serves the communities of Saratoga, Encampment, Elk Mountain, Ft. Steele, Ryan Park, McFadden, and Walcott. Union Telephone Company provides telephone, internet services, and cellular service to customers in Saratoga, Arlington, Elk Mountain, Encampment, Hanna, McFadden, Riverside, and the Shirley Basin. [Note: Digital Subscriber Line (DSL) high-speed Internet service is now available in Saratoga through Union Telephone; the local Cable TV company offers high-speed dial-up Internet access;

and Carbon Power and Light will launch high-speed (750K) Internet access via satellite through WildBlue Communications next year.] Other companies exclusively provide cellular services in both counties.

In 1999, Broadwing, Inc. and Williams Communications installed fiber optic lines along the Interstate 80 corridor. The State of Wyoming required both companies to dedicate a portion of installed fiber optic lines to the State of Wyoming for easements across State lands. [Accessing those I-80 fiber optic lines could measurably improve telecommunications for the Town of Saratoga.]

In terms of economic development, the CEDS report concluded that area natural resources have been inadequately used for fostering the creation of new value-added industries and commercial enterprises. This lack of value-added industries and commercial enterprises in the Great Divide District sustains a cyclical economy that rises and falls with ever-changing fluctuations in commodity prices. Some of these fluctuations have, historically, generated the out-migration of skilled workers. If more value-added enterprises were present, an expanded industrial base would enable balancing of the regional economy and the presence of skilled labor would be sustained. The revenue streams of State and local government would likewise become more stable.

The good news is that there are a few examples of value-added enterprises in the Great Divide District. For example, Church & Dwight established operations in Sweetwater County in 1968 with the production of sodium bicarbonate. By 1980, its industrial manufacturing operations were expanded to include consumer products like carpet and rug cleaner and cat litter deodorizer. Laundry detergent production began in 1986.

The CEDS report recommended that pro-active efforts should be undertaken to link potential business opportunities with available raw materials. Identification of business opportunities that can improve the costs of production associated with existing industrial operations would also be helpful. In Carbon County, for instance, wood chips and sawdust from the Louisiana-Pacific Corporation (LP) mill in Saratoga were being transported to a wood pellet plant in Longview, Washington. Prior to the pending sale of the mill, LP was giving consideration to the development of a 10-15 megawatt co-generation power plant at its sawmill site in Saratoga. A potential co-generation capability could be used to support onsite sawmill operations, as well as generate some sale of locally-generated power back to Carbon Power and Light.

The CEDS stated that it is important that areas for potential industrial development sites be identified in both counties to facilitate future economic development efforts. When examining potential development opportunities, industrial and commercial companies do not wish to spend a considerable amount of time trying to determine where their project might be developed. Prospective companies are looking for communities that have a sense of where economic development activities should take place, and have specific site and/or building information that is readily available for review. Potential commercial sites can be designated based on geology and water resources, the location of utilities, available and planned road networks, rail corridors, land use relationships, wind directional patterns, noise levels, and various community considerations.

Land use databases and geographical information systems (GIS) can be effective economic development tools. Once sites suitable for commercial purposes are identified, it is important that any significant site limitations are addressed. For example, public road improvement or water extension projects can help make a business park site more attractive for investment. The construction of a spec building might be appropriate, stated the CEDS, to attract a potential company.

Both Sweetwater and Carbon Counties have an abundance of visitor attractions. This wide range of recreation opportunities lends itself to the establishment of integrated visitor industry marketing within the 2-counties. County visitor industry councils can work with private accommodations, guest ranches, and chambers organizations to market the Great Divide District as a regional, year-around tourism destination.

In its original Vision Statement dated 13 Dec 01, the Great Divide Coalition placed amongst its top priorities helping the region generate a livable income and enhancing the "quality of life", while attracting value-added industrial and commercial operations that make use of available natural resources or manufactured products. After completing (01 Jul 02) the Comprehensive Economic Development Strategy (CEDS) report and giving a "priority rating" to the study's recommended action goals, encouraging the development of infrastructure that helps attract and support economic investment and a stable tax base was chosen as the single highest ranked priority.

Benchmarking and Target Industry Analysis State of Wyoming 2000

Wyoming Business Council
State of Wyoming

Deloitte & Touche Fantus Consulting completed this study for the Wyoming Business Council (WBC), in March 2000. The study contains an economic analysis of comparative factors for industries that might be attracted to establishing facilities in Wyoming. Fantus was asked to provide an objective, external site selector's perspective on Wyoming.

The purpose for doing this project analysis was the attraction of new industry to Wyoming. The focus of the analysis targeted the state's manufacturing, technology and services sectors. After conducting fieldwork throughout the state, assembling background regional and state economic research, and analyzing a statewide employer's survey commissioned for the project, Fantus conducted a three-phased study to assist the state of Wyoming, primarily by:

- Understanding Wyoming operating costs and operating conditions.
- Benchmarking the six WBC regions against national standards, source location standards, and competing locations in the Rocky Mountain business corridor (largely in adjacent surrounding states).
- Screening and analyzing industries to determine those industries with the greatest synergies with Wyoming's strengths and the greatest likelihood of locating in the state.

Wyoming's six regions and the comparable locations (i.e., Idaho Falls, Missoula, Scottsbluff, Rapid City, Fort Collins, etc.) were analyzed relative to the following factors: labor availability, labor quality and relations, labor costs, real estate, taxes, electric power, telecommunications infrastructure, interstate highway access, air access, and cosmopolitan amenities.

In completing its analysis, Fantus clearly pointed out that from a site selector's perspective, Wyoming cannot be viewed from the same lens as most other states. Specifically, at a time when labor skills and availability and air access are among the primary drivers of many industry location selection decisions, Wyoming does not have an abundance of either.

For Wyoming, the near-term industry targets that Fantus recommended are:

- High-end Customized Outdoor Consumer Products and Apparel
- Back-Office Services
- Printing and Publishing
- Plastics Manufacturing
- Telecommunications Suppliers and Service

Additionally, Fantus recommended that Wyoming "brand" the state, focusing on the unique lifestyle and the industrious spirit of the people. Fantus recommends shifting the economic development focus of the state from being a *low-cost* place to do business to being a *great place to grow a business and raise a family*.

Carbon County Land Use Plan

Carbon County Planning Commission

The *Carbon County Land Use Plan* – a 1998 report to the Carbon County Commissioners – examined regional issues that were expected to influence future land use in Carbon County to the year 2015. The county's future anticipated land uses were reviewed in the context of demands that were expected from the resident population, potential new residents, industry and other segments of the Carbon County economy.

In order to gain the insights of County residents, the Carbon County Department of Planning and Development held two rounds of public hearings at several locations throughout Carbon County. A second information gathering approach was distribution of community attitude surveys to residents, ranches, and small business owners.

Some 155 persons attended public meetings in various communities around Carbon County, while 510 residents responded to resident, ranch, and small business owner surveys. Roughly 53 percent of those surveyed indicated that they planned to remain in the County for the rest of their life if they were able to financially sustain themselves and their families.

The majority of survey respondents (55 percent) favored some population and economic growth in the County. Representatives from 85 ranches in Carbon County completed ranch surveys, some 30 percent of the approximately 286 ranches in Carbon County. About 68 percent of the ranches who responded are owned by families or family-owned corporations, and five percent are owned by corporations that are based outside of Wyoming.

The average ranch size of respondents was approximately 28,700 acres with 667 head of owner cattle per ranch. Survey responses suggest an average of three to four persons (including family members) work full-time on local ranches. Many ranches engage in other agricultural activities that support the lifestyle of family members and other ranch employees, such as maintenance of horses, 4-H project participation and gardening, poultry and honey bee production, and other supplemental activities (like hunting and guiding) that help increase the self-sufficiency of ranch operations.

Surveys of small business owners were distributed to all persons who attended the County Planning Commission's public hearings in March and August 1996 and were made available to other residents who attended the County Fair at Rawlins. Another distribution of small business surveys involved members of the Rawlins-Carbon County Chamber of Commerce, Saratoga Chamber of Commerce, Bow Area Economic Development, and Encampment-Riverside Merchants Association.

Representatives from 122 small businesses completed small business surveys out of approximately 526 small business establishments in Carbon County (U.S. Bureau of the Census, 1994). A high proportion of survey responses were completed by small business owners from the Platte Valley communities of Saratoga, Encampment, and Riverside.

Responding small business owners surveyed primarily included persons involved in retail trade, contract construction, finance, insurance, and real estate services, as well as hotel, motel and other visitor accommodations. Other surveyed businesses include wholesale trade, manufacturing, transportation, and communications. Business owners involved in retail trade represented 28 percent of all respondents. The average responding business owner employed two full-time employees and one part-time employee and had average annual operating expenses in Carbon County of \$347,000.

Some 77 percent of the small business owners reported there were significant factors that constrained their business. The primary constraints included:

- the limited consumer market in Carbon County,
- the distance to suppliers of goods and materials,
- the general business and economic climate, and,
- competition from businesses outside of Carbon County

Other constraining factors included businesses' inability to hire and/or retain qualified and desirable employees, inability to secure adequate operating capital, and the lack of commercial space and commercial-zoned property. The most mentioned general recommendation from business respondents was to encourage improvements to the visual quality of commercial signage along roads and highways.

The *Carbon County Land Use Plan* identifies the primary industries that comprise the regional economic base of the Carbon County economy including timber, mining, oil and gas, agriculture, transportation, tourism, and government.

Chapter 3 - Timber Industry Trends & Analysis and the Feasibility and Sustainability of a Sawmill in Saratoga

An important part of NorthStar Economics' project assignment was to do a timber feasibility study and a feasibility study related to the future operation of the now closed sawmill located in Saratoga. In completing this task, a number of people who are forestry and timber industry experts were interviewed. Appendix A in this report contains those experts and others who have been interviewed.

Raw Timber Supply: Is there enough timber to support the Saratoga mill?

An adequate amount of timber to supply multiple sawmill operations in the Saratoga area depends on a number of factors. The policy of the U.S. Forest Service is a primary factor in determining the supply of timber. Federal forests account for between 60-70% of the available timber within a 120-mile radius of Saratoga and the U.S. Forest Service's harvest plan is key to the future viability of all sawmill operations in the area. From 1976 to 1988, the former Louisiana-Pacific Corporation mill in Saratoga annually harvested all of its raw timber, i.e., about 40 million board feet per year, from the Medicine Bow National Forest (MBNF).¹

A second factor in determining supply is the threat of the mountain pine beetle and the spruce bark beetle. Both of these insects are having a significant effect on forests south of Saratoga and these bug infestations are moving north into forestland surrounding Saratoga.

Building long-term raw timber inventories for local mills are essential to the continued operation of sawmills in Carbon County. With reasonable inventories, mill managers can better plan production activities, enhance marketing opportunities and sustain continued mill production and employment.

Representatives of 44 Lumber & Timber in Encampment and the former Louisiana-Pacific mill in Saratoga, both sawmills are in Carbon County, indicate that their facilities could potentially operate in profitable manners, if raw timber is harvested at reasonable costs within 50 to 100 miles of Encampment and up to 300 miles from Saratoga. Until recently, the level of available MBNF timber supplies has declined steadily since 1988.² [MBNF timber supply trends from 1984 to 1996 shown in Figure A on the following page.]

During recent years, local timber industry representatives have often been significantly frustrated with U.S. Forest Service policies relating to timber sales for commercial harvests. Diminishing raw timber supply from federal forests has had considerable local and national lumber industry impact for almost two decades. For example, 119 softwood sawmills in the United States closed between 1996 and 2002.³ Fifteen (15)

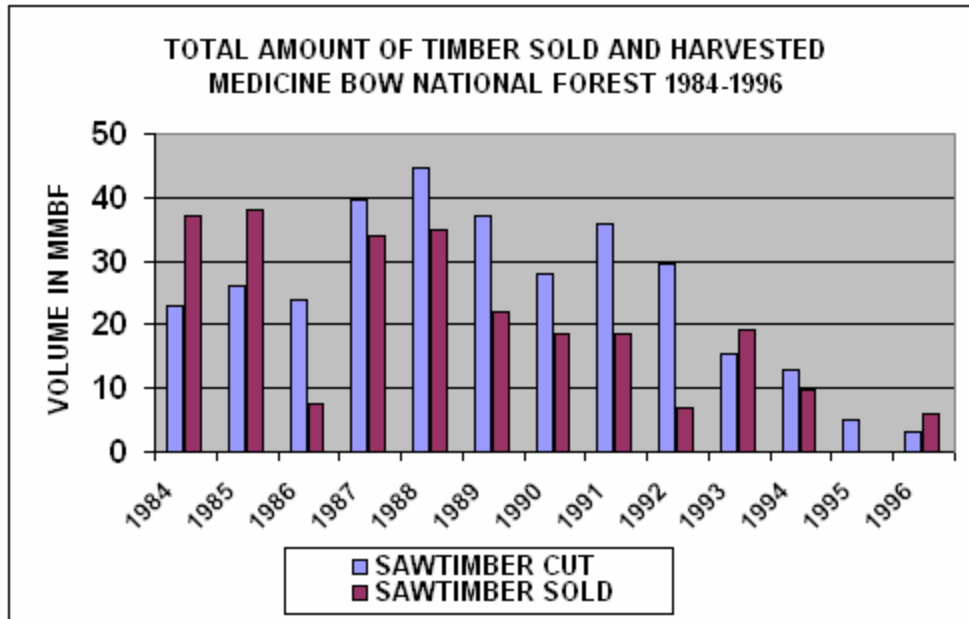
¹ Pederson Planning Consultants, *Carbon County Land Use Plan* (Carbon Country Planning Commission, Rawlins, WY: 1998), 3-9

² Ibid, 3-10

³ Henry Spelter, *Sawmill Closures, Openings, and Net Capacity Changes in the Softwood Lumber Sector, 1996-2003* (Economist, USDA Forest Products Laboratory, Madison, WI: 2004).

large mills in New Mexico and Arizona have gone under during the past decade.⁴ Colorado has just one major timber mill remaining in operation.

Figure A



Source: Carbon County Land Use Plan

According to the *Carbon County Land Use Plan*, Dave Slater and in our interviews, Bill Crapser, former foresters with Louisiana-Pacific Corporation, estimate that over 70 percent of the Medicine Bow National Forest represents a mature, or over-mature, forest.⁵ They believe that a more sound resource management objective would maintain between 25 and 50 percent of the MBNF timber stands in mature forest. Bill Crapser is currently employed as the Wyoming State Forester.

The USDA Forest Service appears currently to be making important modifications to MBNF resource management policies. According to District Ranger Scott Armentrout, U.S. Forest Service Brush Creek/Hayden Ranger District, the *Medicine Bow National Forest Revised Land and Resource Management Plan* that was approved by the USDA Regional Forester (December 29, 2003) proposes modified goals for timber production in the Medicine Bow National Forest during the next decade. At a “desired budget level”, the revised plan recommends an average annual **total sales program quantity (TSPQ)** for the decade at **30.0 MMBF** (million board feet) of timber production.

⁴ Tom Kenworthy, “Western States Troubled by Timber”, *USA TODAY* (Nation News: Jan. 27 '04).

⁵ *Ibid*, 3-12

At our interview for this report, District Ranger Armentrout stated that U.S. Forest Service goals for timber (million board feet) being removed from the Medicine Bow National Forest during the next fiscal years are:

2004	30 million
2005	40 million
2006	30 million
2007	30 million
2008	30 million

Through its extensive planning procedures, the U.S. Forest Service identifies an "allowable sale quantity" of timber production – or ASQ – that would be met by harvesting raw timber from planned *management [geographic] area prescriptions*. ASQ volumes include only saw timber harvested from suitable timberlands, although the Forest Service acknowledges that timber harvests "may be allowed in other management [geographic] area prescriptions". Timber harvests from other geographic areas "would not contribute toward the ASQ but would contribute towards the *total timber sale program level*."⁶

The USDA Forest Service warns that "ASQ has not been a reliable predictor of actual harvest levels." Annual federal budgets, project appeals, litigation, market conditions, natural disasters, and changes in national policies affecting resource management all have combined historically to influence timber harvest levels at Medicine Bow N.F. and other national forests.

"Timber products other than live saw timber and salvage of dead timber can be harvested from both suitable and unsuitable timber lands", the U.S. Forest Service declares. For instance, "Fuel treatment in the wild land urban interface is a good example of an activity yielding timber products that generally do not come from suited timber lands. While these products are not counted toward allowable sale quantity, they nonetheless count toward total harvest volumes."⁷

The volume from these several timber products, live saw timber, and firewood for personal use is called **Total Sale Program Quantity (TSPQ)**. This total product quantity has been estimated with the above projected annual **30.0 MMBF** for Medicine Bow National Forest.

Every U.S. Forest Service projection cited remains, of course, only an intended goal of the federal government, not a guaranteed result. The USDA Forest Service grapples continuously with changing national policies, with their own revised strategies for project appeals and litigation, and with annual federal government budget processes. No one can say precisely what will be the timber quantities supplied during the next years from Medicine Bow N.F. and other national forests. Yet, the Forest Service has significantly refined its strategies for responding to anti-timber extraction litigation, and has adopted

⁶ Italic added

⁷ USDA Forest Service Rocky Mountain Region, *Medicine Bow National Forest Final Environmental Impact Statement and Revised Land and Resource Management Plan, Record of Decision* (December 2003), 34

new forest resource management strategies based upon Congressional authorizations and mandates, such as the recent Healthy Forests Restoration Act of 2003.

It appears that more definitive paths of federal actions are now possible. During our interviews, when asked about federal goals for expanded timber sales from nearby national forests, an experienced lumber mill professional, Gary Erickson, Manager of Bighorn Lumber Company since 1995, declared himself to be “cautiously optimistic” about current MBNF timber harvest plans.

Lumber Industry Capacity Projections

For the U.S. Forest Service to accurately estimate future timber volumes that may be processed into lumber at local lumber mills, the revised MBNF forest plan considered a variety of factors – some which influence timber supply and others that influence mill capacities.

Available national forest timber has been, in recent years, a relative low share of raw timber harvested within the local lumber industry’s “market area”. The balance of recent raw timber supplies has been provided by state, private, and other ownerships. However, according to estimates in the revised federal Forest Plan, it is “generally recognized that recent [timber harvest] volumes from state and private ownerships are not sustainable in the long run.”⁸

Timber markets have changed dramatically over the years, especially since the original Medicine Bow National Forest Plan was signed in 1985.

Three large sawmills are adjacent to the Medicine Bow National Forest, and two of these mills – including Saratoga – recently changed ownership. The USDA states that “it is difficult to forecast production” at these facilities. Lumber mill production projections at these facilities are complicated “because total timber shed volume would fall short of fully utilizing all local industry one-shift capacity”. The U.S. Forest Service notes that, “Not all mills may be equally viable.”⁹

A federal forest plan, as previously cited, is prepared in accordance with the 1976 National Forest Management Act (NFMA), the 1969 National Environmental Policy Act (NEPA), and other laws and regulations. A forest plan should ordinarily be revised on a 10-year cycle or at least every 15 years and provides basic guidance for all resource management activities on a national forest.

The National Fire Plan (NFP)

The National Fire Plan became public policy for federal forests and grasslands in 2001. In order to implement The National Fire Plan, the U.S. Forest Service works with state and local partners to galvanize fire preparedness and prevention efforts. Working together, these partners have identified Wyoming communities threatened by wildfire

⁸ Ibid, 35

⁹ Ibid. [Bold was added]

and has prioritized projects to avoid fire losses, including projects that protect natural resources like watersheds and wildlife.

The State of Wyoming listed **Communities at Risk** that were identified in the *Federal Register* on August 17, 2001. Some of these communities are within a 120-mile radius of Saratoga.¹⁰

The impetus for new federal fire and healthy forest initiatives, such as The National Fire Plan and the Healthy Forest Restoration Act, peaked with the severe wildfire seasons in 2000 and 2002, when 8.4 million and 6.9 million acres burned, respectively.¹¹ The 2002 fire season saw 88,458 wildfires destroy public and private lands larger than the states of Maryland and Rhode Island combined. Even more disturbing, the 2002 catastrophic forest fires took the lives of 23 firefighters. And New Mexico, Oregon, Colorado, and Arizona registered their worst fires in modern history.

Attempting to minimize Wyoming's wildfire dangers, the U.S. Forest Service actively participates with the Wyoming State Forester, counties, federal and state agencies, and other fire agencies to jointly develop fire management plans and **fuels reduction projects** for at risk Wyoming communities.

Through management programs that include timber, fuels, range, and wildlife, federal forest vegetation is now being managed in ways to lower the risk of catastrophic wildfire losses in high value areas. The U.S. Forest Service utilizes a variety of tools, such as timber sales, stewardship contracts, service contracts, volunteer labor, and prescribed fires to achieve desired conditions.

Regarding regional economic development opportunities, local community service contracts under The National Fire Plan (NFP), **particularly stewardship contracts**, can offer significant potential for increasing area employment opportunities. New jobs can be created to perform the labor necessary to clear fuel accumulations in high-risk areas where the forest and urban areas interface.

Congress enacted legislation that expanded stewardship contracting capabilities (The Omnibus Appropriations Act for FY 2003), permitting federal agencies to enter into long-term (up to 10 years) contracts with small businesses, communities and nonprofit organizations to reduce wildfire risks and to improve forest health. These stewardship projects can reduce costs normally associated with federal forest contracting by allowing contractors to keep portions of timber and other wood fiber resources in exchange for services of thinning trees and the removal of brush and dead wood.

Stewardship contracting can help the federal government achieve public land management goals like restoration and enhancement efforts. These contracts are awarded by federal agencies on the basis of "best value".¹²

¹⁰ Currently 400 million acres in the U.S. across all ownerships are at risk from catastrophic wildfire, according to the U.S. Department of Interior and USDA.

¹¹ U.S. Department of Interior and USDA

¹² Allowing the federal government to consider performance as well as bid price.

These long-term contracts can foster public/private partnerships and assist projects that are more experimental and innovative with their entrepreneurial cash flows. Contracting periods up to 10 years can help prospective community and private contractors qualify for and obtain necessary equipment and working capital loans. The thinning of forest undergrowth and small-diameter timber can also lead to subsequent entrepreneurial business activities that make useful wood products and produce biomass energy.

New local jobs can be created from timber cuttings involving urban interface areas and areas hit by mountain pine beetle and spruce beetle infestations.

Viewpoints and Estimates of the Supply and Demand for Timber in a 120-mile Radius around Saratoga

As part of our study, we interviewed a number of people who have a working knowledge of the supply and demand for timber in a 120-mile radius around Saratoga. The table below summarizes the opinion of three individuals that we believe have a good handle on the timber situation in the area.

FIGURE B

TIMBER SUPPLY ESTIMATES (MMBF)			
	STATE FORESTER	U.S. FOREST SERVICE	FORMER L.P. MILL MANGER
NATIONAL	32	30	10-20
STATE	5	5	5
PRIVATE	15	15	15
TOTAL SUPPLY	52	50	30-40
TIMBER DEMAND ESTIMATES (MMBF)			
INTERMOUNTAIN	36	36	
LARAMIE MILL	14	14-15	
44 LUMBER	5	3-4	
TOTAL DEMAND	55	54	50-55
TIMBER SUPPLY GAP	3	4	10-25

The table above contains a summary of NorthStar Economics information gathered during our interviews for this project. The people interviewed are or have been engaged in the timber industry or in government services charged with collecting data and managing public policy with regard to timber production. There is remarkable agreement on the numbers especially viewpoints with respect to demand for timber. On the supply side there is some disagreement and that disagreement is directly related to the expectations of harvest from federal lands.

Under the best-case scenario, there is a small gap between timber supply and demand with demand exceeding supply by 3-4 million board feet. Under the worst-case scenario, there is a substantial gap with demand greatly exceeding supply. In the end, the key factor in timber supply in the area around Saratoga is the policy and action of the U.S. Forest Service which is responsive to political directions coming from their agency's regional and national offices.

In Saratoga, and much of the West, there is real doubt about a steady supply of federal timber due to the policies and actions of the U.S. Forest Service. The chart on the next page shows the variability of timber sales and harvested timber in the Medicine Bow National Forest. The variability of timber harvest, which seems to correspond to changes in the party in power in the federal government, poses serious risk to those who try to run or work in a timber related business.

The Nature of the Timber Supply in the Saratoga Area

The availability of timber in and around Saratoga is the most likely natural resource on which to base industrial development. The timber growing in the area is primarily lodgepole pine. While it is plentiful, lodgepole pine has some genetic characteristics that reduce the value of harvested lodgepole pine logs. For example, lodgepole pine often does not grow straight and frequently has a lot of bends and curves in the trunk that diminishes its dimensional timber value. Also due to moisture and soil conditions, much of the regional supply of lodgepole pine is small diameter. The small diameter logs limit the dimensional lumber yield from each log and this poses problems for less flexible mill operations that rely on traditional dimensional lumber products.

The Feasibility of a Sawmill in Saratoga

Saratoga and its adjacent competitive region have three (3) lumber mill operations, two of which are currently active. The history and operating characteristics of these operations are summarized below.

44 Lumber & Timber

The **44 Lumber & Timber** mill is an operational mill that is family-operated facility in Encampment, Wyoming. It currently employs approximately 40 full-time workers.

The Encampment mill was started when entrepreneur Mike Hammer bought a portable sawmill in 1950, which operated at various locations in Carbon County. In 1961, the portable mill was moved to Encampment. After serving wholesale and retail customers, a regional downturn in the Carbon County economy forced a closure of the mill in about 1979. In 1982, the Hammer Mill re-opened after securing a U.S. Forest Service contract for harvesting approximately 10 million board feet (MMBF) of timber through a federal small business set-aside contract. The U.S. Forest Service contract enabled the Hammer Mill to purchase a new sawmill in 1984 and new planer equipment in 1989.

Like the other local lumber mills, the Hammer Mill hauled its raw timber supplies, acquired from timber sales, from nearby forests owned by the U.S. Government, by the

State of Wyoming, and occasionally by private landowners. The Hammer mill has primarily harvested the area's predominant lodgepole pine and Engelmann spruce timber species, typically hauled within a 50-mile radius. The Hammer Mill sawed and planed timber into 1x material, e.g., 1x4 through 1x12 boards. Wooden studs for the construction industry were processed at the mill until 1994. Wood shavings and wood chips were sold to market sources in Colorado.

In 1998, Mike Hammer and family retired from timbering and lumbering activities and closed the Encampment sawmill. During their final operating phases, the Hammer Mill had purchased a precision saw that enabled profitable timber processing of small-diameter lumber (less than 6.9 inches). In 2003, local entrepreneurs – Doug and Debbie Boykin – purchased the idle sawmill and renewed processing 1x materials primarily from small-diameter raw timber.

Bighorn Lumber Company

A second local lumber mill, **Bighorn Lumber Company**, is a family owned operation that employs 65 workers producing 1-inch boards and wood chips at its Laramie, WY facility.

Louisiana-Pacific Mill

The third mill is located in Saratoga and is the site of the former Louisiana-Pacific Corporation (LP) lumber mill. The mill ceased operations in 2003. The production site, buildings and equipment were sold to **Intermountain Resources LLC** headquartered in Montrose, CO, and the facility has remained idle and future utilization uncertain. Prior to terminating production, the Saratoga mill provided direct employment for 130 employees. In addition to the mill employment, there were contractual workers who supplied logging, trucking and other services to the mill.

The former Louisiana-Pacific facility in Saratoga, WY was a regional lumber mill. Louisiana-Pacific Corporation purchased the mill from the Edward Hines Corporation in the early 1980's – and was the most recent operator of the mill. Long-term county residents estimate the Saratoga mill has had five different owners since about 1940.

Approximately 90 percent of the production at the Louisiana-Pacific operation was associated with the processing of raw timber for 8-foot, 2x4-inch lumber for the construction industry. Secondarily, the mill produced construction grade 1x4 and 2x3-inch lumber. These lumber products were stamped according to the quality criteria determined by the Western Wood Products Association. Wood chips were a by-product sold to the paper industry. Wood shavings derived from the operation of the planer were burned as a source of energy and sold to turkey farms for an absorbent material.

Louisiana-Pacific Corporation (LP) attempted to limit its timber harvest activities to a 300-mile radius around Saratoga. This mill did occasionally obtain raw timber beyond this radius from geographic areas where competing mills had closed and/or there was a special need for local forest management. For instance, before ceasing operations, LP received large quantities of timber from New Mexico delivered by the Wyoming-Colorado

Railroad. The 300-mile limit was only exceeded when raw timber could be purchased at more favorable prices.

LP's Saratoga mill harvested its timber primarily from central and west Wyoming, as well as out of the Rout and Arapahoe-Roosevelt National Forests in Colorado.

In 1996, the Saratoga mill obtained a timber contract from the U.S. Forest Service for purchasing 8 million board feet of live saw timber from the Medicine Bow National Forest. Unfortunately, a concurrent reduction of federal timber sales occurred both locally and nationally during the late '90s, and the Saratoga lumber mill began to experience difficulty acquiring timber sales to supply its commercial timber harvest needs. During the LP mill's final 4 years of operation, before its 2003 closing, the Saratoga mill did not obtain a single federal timber sale from the 1.1 million-acre Medicine Bow National Forest (MBNF).

Each of the local sawmills has depended on raw timber supplies from the neighboring Medicine Bow National Forest (MBNF). For instance, Bighorn Lumber Company would typically obtain 8 to 10 million board feet (MMBF) of raw timber supplies from close-in national forests, including MBNF, in order to process 1x4, 1x6 and 1x8-inch boards. During 2003, however, Bighorn secured only 2.0 MMBF from nearby (northern Colorado and southern Wyoming) national forests and depended primarily upon state and private landowner timber sales.

While a steady timber supply is essential, there are a number of other critical factors in determining the feasibility of Saratoga sawmill. In the course of our interviews, NorthStar Economics gathered a number of opinions about the feasibility of a sawmill operation in Saratoga. An "X" in the box in the table below indicates that the person interviewed mentioned that factor as important to the economic feasibility of the mill.

CRITICAL FACTORS	STATE FORESTER	U.S. FOREST SERVICE	FORMER LP MANAGER	INTERMOUNTAIN RESOURCES
Adequate timber supply	X	X	X	X
Railroad service	X	X	X	X
Investment to modernize current plant	X	X	X	X
Tax Breaks/Incentives				X
Business Plan		X	X	X
Rebuild Logging Infrastructure		X	X	X
Positive Political Climate for Logging		X	X	X

NorthStar Economics' Conclusions:

While a sawmill has operated in Saratoga, Wyoming for many decades, the competitive conditions in the timber industry and the U.S. economy have change significantly in the last twenty years. Changes in the industry and the economy are driven by globalization, technology, productivity and changing markets. These economic drivers have changed the face of many U. S. industries such as paper, steel, auto manufacturing, airlines and many others. In light of these changes, is a sawmill in Saratoga feasible?

We believe that the answer to that question is a qualified "yes". A sawmill operation in Saratoga is feasible if certain conditions are met. The following conditions are necessary to make the Saratoga mill feasible for the next 10-20 years:

- A steady and abundant supply of timber
- Investment to modernize the plant
- Railroad service to ship finished product
- A favorable political climate toward timber harvest at the federal level

Adequate timber supply and a positive political climate for logging are obviously related. While there is no question that there is enough standing timber within 120 miles of Saratoga to support the mill operation, the question remains as to whether federal forest policies will allow enough timber harvest to produce a steady supply of raw material.

Given the nature of the timber supply in the region, a competitive mill will require substantial investment to modernize the plant in order to make it a flexible production facility. A flexible production facility would be able to rapidly change production and respond to marketplace price changes. A flexible mill could serve different market opportunities, such as varying the dimensions of lumber produced (2x4 versus 1x12) and/or boosting the production of wood chips, bark and mulch as marketplace prices change. Modern computer technologies that scan raw logs are now able to maximize yield from every log. While the existing Saratoga sawmill has some technologies needed to be competitive, the new owners of the mill estimate that an investment of \$6 million would be required to re-open and modernize the mill.

In addition, any mill operator at the former LP site must give consideration to rebuilding the personnel infrastructure of logging teams who are able to extract raw timber supplies from nearby public and private forests. These logging teams have mostly operated as independent contractor units at the LP mill in Saratoga.

Knowledgeable area timber professionals claim that as more time passes, it will be increasingly difficult to assemble the timber production managers and their team members who can supply the Saratoga mill's required raw timber. Among those timber extraction personnel who have remained in the area, many logging operators have moved into other business pursuits and lines of work – some permanently. The timber extraction equipment costs for new entrants to this business activity are approaching hundreds of thousands of dollars. In the future, potential logging operators may

hesitate to incur equipment expenses given uncertain market opportunities or they may be unable to secure the financing for needed equipment.

Finally, the mill would need rail service to efficiently move finished product to market. High trucking costs in the area and distances from markets put the Saratoga mill at a competitive disadvantage because of high transportation costs. Rail service helps to keep the mill competitive by offering a cheaper way to ship finished product.

If these conditions can be met, the Saratoga mill should be competitive and have a chance to operate for a long time. Such a mill would employ fewer people (70-75 mill workers and 100-135 contract and support workers) but might have a chance to survive future lumber and timber price cycles.

Chapter 4 - Alternative Uses for the LP Mill Site

The best possible use of the existing LP mill site is as a sawmill producing dimensional lumber and other wood related products such as wood chips for pulp, bark mulch, and biomass fuel. The feasibility of maintaining the site as a sawmill and NorthStar's recommendations related to the sawmill option are fully covered in Chapter 3.

If the LP site is not used as a sawmill, then NorthStar Economics believes that there are several alternative uses for this site that could create year around employment. In order to implement these options, either the current owner would need to see the alternatives as part of the company's long term business plan or more likely, the Town would need to acquire the site and redevelop the property.

In the course of our interviews, NorthStar Economics asked state, county and local people to suggest other options for the use of the site. Most responses to this inquiry have been general suggestions that are helpful. A few people have offered more specific ideas that we will review later in this chapter.

Almost everyone consulted thought that the site was best suited for industrial uses. The most common idea was to develop the site as an industrial park that could house a number of small manufacturing businesses. The continued availability of the rail line might offer the potential of some heavier or more bulky products being produced or rebuilt (i.e., large motors) at the industrial park.

Key Factors in Using the LP site for Other Purposes

There are a number of factors that will determine and or limit the economically feasible alternative uses of the LP site. These factors include the following:

- The basic site infrastructure
- Transportation connections including the rail line
- The availability of business entrepreneurs and managers
- Proximity to markets
- The availability of local investment capital
- Available raw material input
- Available labor force

There seems to be general agreement that the LP site is suited for industrial uses from the standpoint of existing infrastructure. Prior sawmill operations have provided a good test of the basic infrastructure needed to operate many types of manufacturing businesses. Roads, sewer, water and power utilities are industrial grade. The existing buildings appear to be in good shape and might serve one or more businesses that would locate on the site. However, water and sewer pipeline diameter upgrades to 4" and 6" pipelines starting at the property boundary may be required for some higher utility use businesses or for multiple businesses that might become interested in locating or building on the site. With site building and expansions, some 6" water lines at the site may be required for fire protection purposes.

The most important site infrastructure shortfall may be lack of high speed broadband telecommunications. Basic phone service and Internet dialup is available but highest speed Internet connections are not yet available. [Note: The Town Council of Saratoga passed a resolution on 02 Nov 04 supporting a proposal from Northern Lights, Inc. to design, build and operate a fiber optics telecommunications network from Walcott to Saratoga.]

The complete mill site offers 40+ acres for assorted kinds of business purposes, although only about 20 acres is actually developable land that would accommodate new facilities and structures. Considerable acreage of the former LP site near a creek and irrigation ditch is soft and marshy land, which has already received significant sawdust and timber debris in-fill.

Transportation is a key factor in determining possible uses for the former LP site. In order to operate a sizable sawmill, then an operating rail line is essential. In the case of most possible alternative uses for the site, a rail line would be helpful but not essential. The exception to that is any use that would involve businesses that would have to ship material (e.g. resins) or that would produce bulky products such as pulp chips that would need to be shipped to market. In instances such as these, Saratoga's remote location and the subsequent transportation costs pose meaningful economic barriers to such businesses.

The successful development of a manufacturing industrial park would take entrepreneurial and management talent. Some of that may be available in former LP employees and businesses in the area but it is likely that people willing to start businesses would have to be recruited to the area. That in fact seems to be the case for a lot of area enterprises, but the natural beauty and quality of life offered by the local community make that look feasible.

Saratoga has a significant challenge in terms of local markets and distance to market. The nearest urban areas in Colorado and Utah are helpful but Saratoga is a long distance from major markets on the coasts and in the Midwest. Businesses that can play to niche markets, custom markets and e-commerce situations may be the exception to the rule. Manufacturing and/or distribution businesses that focus on outdoor sporting equipment for fishing, hiking and camping would be an example of a business that might not need large local markets to succeed. However, if properly promoted through local marketing strategies, these products might also be merchandised to both area residents and outside visitors in a local products shop at the convention center or at Shively airport or directly at individual factories as imperfect "seconds" or discounted "firsts".

The development of a manufacturing industrial park in a rural location will require capital investment and perhaps some state and local incentives. If a good case can be made for the creation of local jobs, there are some state programs that might be tapped for assistance. We cover these sources of capital in our later recommendations.

Beyond governmental sources of capital and those that an entrepreneur would bring to the business, there is little in the way of organized sources of startup or early stage

financing available. As pointed out elsewhere in this report, there are some entrepreneurial investments being made by creative individual investors within the area, but these types of activities must be further analyzed and expanded if possible.

Finally, an industrial park development will require a skilled labor force. The shutdown of the former LP mill has caused part of the Saratoga's workforce to leave the area for other jobs. It is unclear, however, the extent of the net out-migration experienced by Saratoga, if any, since the closing of the Louisiana-Pacific lumber mill in early 2003. For instance, Carbon Power & Light initially experienced some electrical residential disconnections following the mill closing, but these disconnections have been largely reversed. Even more interesting, the Saratoga elementary, middle and high schools experienced increased total school enrollments dating from October 1st 2003 compared to 12 months later (2004). The Saratoga community does have unemployed and underemployed people, but substantial industrial redevelopment will require some rebuilding and retraining of the local workforce.

The State of Wyoming offers an assortment of state and federal funded workforce training programs (exclusively state funds are the most flexible) – helping Wyoming employers meet their needs for trained employees. Additionally, Wyoming has seven community colleges and the University of Wyoming that offer a range of degrees and technical training opportunities, including distance learning programs for business administration and other fields. The Carbon County Higher Education Center operates numerous local education and training programs under the auspices of the Western Wyoming Community College at Rock Springs.

Coordinating its job training services for employers with Wyoming Business Council staff, the Wyoming Department of Workforce Services (DWS) provides a broad collection of services complimenting its main goal of connecting job seekers with employers needing trained workers. The Workforce Development Training Fund (WDTF) which contracts for training grants with employers is administered by DWS. Two (2) key programs are:

- Business Training Grants that provide opportunities for new or existing businesses to train new workers or to complete necessary skill upgrades.
- High-Demand Occupation Grants that offer pre-employment, workforce development tools to prepare workers for filling gaps in high-growth fields.

In Wyoming, the Workforce Development Training Fund helps new and existing in-state industries at training newly hired or current employees. Under these programs, more than 450 businesses in Wyoming have accessed job training contracts and nearly 5,900 workers have upgraded job skills.

Besides a revival of the sawmill operation, or attracting enterprises to locate in new industrial or business parks, other established local enterprises – large and small – might make use of State of Wyoming workforce training grants to provide employment training for new workers or to upgrade the skills of current employees.

Additionally, the Wyoming Business Council has licensed nationally recognized workforce training programs such as:

Quick Start

The Wyoming Business Council and the Wyoming Community College Commission entered into an interstate partnership with the State of Georgia to improve workforce development programs in Wyoming. Quick Start is a nationally recognized program providing training services since 1967. The Georgia Department of Technical and Adult Education licenses three training certification programs to the Business Council and WCCC.

1. Certified Customer Service Specialist training creates skilled workers for service, hospitality, retail and other industries in which customer contact is a vital to operations.
2. Certified Manufacturing Specialist training helps to enhance manufacturing companies with qualified workers, focusing on skills ranging from business principles to basic plant safety.
3. Certified Warehousing & Distribution Specialist training provides new skill levels and ingenuity in warehousing and distribution.

Development Dimensions International (DDI)

Supervisory and Leadership Training programs have been licensed by Development Dimensions International (DDI) to the Wyoming Business Council and WCCC. DDI curriculum is delivered in half-day, full-day or multi-day formats to meet differing schedules and training needs.

Workforce trends and employment and unemployment data for Carbon County are included below to help put labor force issues into some perspective.

FIGURE C

CARBON COUNTY														
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
LABOR FORCE	8,833	8,617	8,334	8,313	8,746	8,740	8,573	8,242	8,281	8,434	8,354	8,267	8,019	8,121
EMPLOYMENT	8,357	8,120	7,835	7,806	8,262	8,279	8,120	7,818	7,836	7,986	8,017	7,902	7,655	7,670
UNEMPLOYMENT	476	497	499	507	484	461	453	424	445	448	337	365	364	451
UNEMPL. RATE	5.4	5.8	6.0	6.1	5.5	5.3	5.3	5.1	5.4	5.3	4.0	4.4	4.5	5.6

Source: State of Wyoming Department of Employment

Chapter 5 - The Economic Development Potential of Shively Field

One of the truly unique economic assets in the Town Of Saratoga is the local general aviation airport, Shively Field. According to the *2004 Report on the Impact of Aviation in Wyoming* prepared by the Aeronautics Division of the Wyoming Department of Transportation, Shively Field is the most active general aviation airport in Wyoming. That study makes the following points about the economic impact of Shively Field:

- General aviation operations created 484 jobs in Saratoga and the surrounding region
- General aviation visitor spending from people who flew in and out of Shively Field amounted to \$5,889,875, second only to the total general aviation expenditures at the Jackson Airport
- The average expenditure of general aviation visitors at Shively Field was \$1,954, the highest of any general aviation facility in Wyoming
- Shively Field had 11,460 operations (takeoffs and landings) in 2003, the most of any general aviation facility in Wyoming

Shively Field is located on the southwestern edge of the Town of Saratoga and is owned by the Town of Saratoga. A private firm, Saratoga Aviation, Inc, provides general airport services and airplane services. The Field has an unusually long runway that is listed at between 8,400 and 8,800 in various airport databases. The airport now has a paved taxiway that is parallel to the entire length of the runway. There are 12 private aircraft that are based at Shively Field.

The airport is capable of handling all common general aviation aircraft and can handle charter and commercial aircraft as large as a Boeing 737. The airport has a very nice terminal building and maintenance building to service incoming and outgoing passengers and flight crews. The airport has a number of private hangar buildings and two airport hangars operated by Saratoga Aviation that can accommodate visiting aircraft.

Shively Field is a general aviation airport. It does not have regularly scheduled passenger service. Its clientele consists of owners of private planes and air charter services. The main source of airport traffic and visitors is related to leisure and tourist travel to local destinations including the Old Baldy Club and the A Bar A Ranch.

Shively Field is a large site consisting of more than 500 acres. The Shively Field site is large enough to accommodate business development but substantial infrastructure investment would have to be made to enable business operations. Part of the site is used for the terminal, aircraft hangars and runway. FAA regulations require 750-foot safety zone on either side of the center of the paved runway. With these space constraints in mind there are two sites that could accommodate business park development plans. One site located north of the runway is an irregularly shaped parcel of approximately 48 acres. The other site located on the south side of the runway and west of the existing hangars and terminal building is a little over 58 acres. A map of Shively Field showing these development sites is shown below in Figure D.

Shively Field has a number of economic development assets not generally found in a general aviation airport in a rural area. Those assets include

- A long paved runway measuring 8,800 feet
- A parallel paved taxi way
- A high number of annual flight operations largely concentrated in a timeframe between Memorial Day and the end of September
- Full flight services including jet fuel and transient aircraft hangar space
- Available land for business development
- A large number of privately owned aircraft hangars
- Visitor clientele with high income and wealth characteristics

Economic Development at Comparable Rural General Aviation Airports

It is difficult to find a general aviation airport that combines all of the characteristics of Shively Field. Most general aviation airports have little in the way of an industrial or economic development program. However, we can learn something from the following sampling of general aviation airports:

- Accomack Airport, Accomack County, Virginia - This general aviation airport is located on the Eastern Shores, a fairly isolated peninsula of land surrounded by the Atlantic Ocean and shared by the states of Maryland and Virginia. Accomack County has established an industrial park at the airport. The park is promoted to "a pilot who owns a business". The park contains 14,000 feet of industrial frontage and is fully equipped with water, sewer, drainage, electric and telecommunications services. The park has a number of tenants including the local chamber of commerce, a local utility construction company and a manufacturer of wood trusses for commercial and residential construction
- Eagle River Union Airport, Eagle River Wisconsin - Located in the tourist and timber country of northern Wisconsin, the airport reported 23,500 flight operations (almost three times as many as Shively Field). The airport has a 5,000-foot runway designed to handle recreational, corporate, charter and cargo users. The airport offers fueling operations, flight lessons, car rental and hangar and tiedown services. There are four fixed base operators located at the airport who offer seasonal shuttle services, charter and air ambulance service, repair and sales of aircraft fuel cells, aviation maintenance and upholstery repair and aircraft restoration.
- Bend Municipal Airport, Bend, Oregon - Located in the heart of the Central Valley at the base of the Cascade Mountains, the airport consists of 415 acres and has a 5,000-foot asphalt runway. The airport offers fueling services, aircraft parking, and airframe and power plant services. The airport has a number of business tenants including a flight service offering charters, lessons and

rentals, an avionics company selling and servicing avionics and accessories, an aircraft manufacturer and an aircraft parts and supplies dealer.

Potential for Economic Development at Shively Field

The airports cited above are a small sample of the economic and business activities found at general aviation airports. There are numerous other examples of economic development associated with airport facilities.

Indeed, four (4) community applicants who recently applied to the Business Ready Community Grant (BRCG) Program for infrastructure improvements offered by the State of Wyoming were business park developments involving regional airports. These Wyoming communities included Sheridan and Big Horn Counties who submitted BRCG Applications that were approved (each had committed businesses identified), and the Town of Hulett and the Laramie Regional Airport Joint Powers Board that were informed they were not ready for funding.

The most common type of development relates to the nature of an airports business. Because planes fly in and out of an airport, there is a natural demand for the following kinds of services:

- Fuel sales and service
- Aircraft maintenance on the airframe and powerplant
- Hangar and tiedown services
- Flight training
- Charter air service
- Oxygen service
- Car rentals
- Food and catering service

Airports also host businesses related to major work and sales of aircraft and aircraft equipment that would draw in business other than local flight operations. These businesses might include

- Major airframe and powerplant repair and overhaul
- Avionics sales, installation and repair
- Aircraft restoration
- Flight base operations

A retired corporate executive residing in Saratoga believes that major air transport companies might be motivated to reposition components of their maintenance and repair operations to Shively Field in Saratoga. Facilities for some aviation maintenance purposes currently operate in the Pacific Northwest – considerable distances from Midwest and Eastern air service markets. A Saratoga site choice would offer additional advantages of lower personnel and facility costs compared to many U.S. aviation maintenance site locations.

There are several active and retired major corporation executives who reside, at least seasonally, in the Platte River Valley. These corporate leaders maintain key business contacts inside America's biggest corporations. If properly pursued, these individuals would likely open doors and make introductions to companies that could be willing to do business in Saratoga. These valuable corporate contacts may offer the town its most promising larger scale economic development potentials.

Besides business and economic activities directly associated with aircraft and flight operations, there are many examples of businesses at general aviation airports that have little to do with aircraft or their flights. These businesses may be located at an airport because business operations such as product distribution are facilitated by flight, because the business owner is a pilot who wants to be located at an airport, because the business gains visibility and customer visits at an airport or because land size and price and basic services offer a competitive advantage. We found many examples of businesses in these categories that were located at general aviation airports.

Interviews conducted in the course of this study have indicated that economic development at Shively Field has from time to time been discussed. A few business inquiries about locating at the airport were noted in our interviews. These inquiries included a flight service business and a propeller manufacturer that briefly operated in an airport hangar.

The biggest single barrier to locating a business at Shively Field is the lack of basic sewer and water services to the developable sites. Only water serves a small part of the airport. That service is largely confined to the terminal building and one aircraft hangar building. All of the other existing buildings including the other aircraft hangar facilities lack sewer and water service.

It is estimated that both proposed airport business park sites might be improved within the maximum budget limits of the Wyoming Business Ready Community Grant (BRCG) Program. If subdividing the airport business parks into individual 3-5 acres lots for future site developments, this would necessitate underground sewer and water lines and new road construction running in a continuous loop adjacent to each designated business parcel. For instance, 3,000 ft. of water and sewer lines could be installed for \$150,000 at a conventional \$50/ft. cost; a similar new road (including curbs and gutters) could be paved at each business park for \$450,000 for an approximate \$150/ft. cost. A maximum Wyoming BRCG Program award amount comes to \$1.5 million and requires a 10% (\$150,000) cash or in-kind matching contribution.

Providing basic utility service to each of the two possible development sites would open up the airport to commercial development. Given the FAA restrictions on airport development and the plans for future airport development, the development of these sites might be targeted as follows:

1. The site South of the runway should be devoted to aviation related businesses. The site is close to exiting hangar buildings and the key parts of the airport aviation infrastructure.

2. The site North of the runway should be devoted to general business development. Businesses that do not need direct access to the taxiway, ramps or runway would be located in this site.

This second site might be an ideal location for the Arts & Business Incubator facility and other build-to-suit Business Park buildings (a significant advantage would be its close distance – indeed walking distance – to the planned Platte Valley Community Center, thereby facilitating tours and inquiries by some outside visitors).

If the airport development plan is chosen for future economic development efforts, then there needs to be a marketing plan and someone who is given the task of marketing the airport sites. The lack of an active marketing plan that defaults to a “build it and they will come philosophy” will likely diminish the probability of successful site development.

Chapter 6 - Other Economic Development Possibilities

We have four suggestions for other economic development possibilities not connected directly with tourism or timber. These suggestions include

- Economic development around the arts
- Economic development around a community center
- Economic development around entrepreneurship and establishing new small businesses
- Economic development around enhanced deal flow

Economic development around the arts

With its distinctive scenic and natural beauty, the Town of Saratoga has attracted several talented resident artists and craftsmen who have demonstrated considerable commercial potential and professional capabilities. The arts can enhance the quality of life and add to the commercial base of Saratoga.

In addition, the **Platte Valley Arts Council** in Saratoga has become a nationally recognized program for a rural area at promoting local artistic and cultural diversity and increasing arts related economic activity within the local community.¹³ Begun in 1990, the Arts Council has been supported by modest, but diverse funding from businesses and individuals in the community.

Prior to the Council, many felt that Saratoga lacked cultural activities such as art and theatre. The Platte Valley Arts Council succeeded in bringing these activities to the area as well as increasing local economic activities through organizing an annual July 4th Arts Fair. Besides the Arts Fair, the Council also sponsored a local drama club, the Platte Valley Players, and supported art in the public schools by bringing in local artists to work with the children to develop an appreciation of art. Regular concerts and cowboy poetry readings sponsored by the Council have become popular events in Saratoga. A future goal of the Platte Valley Arts Council has been the development of a *community arts center* for bringing long-term cultural and economic benefits to the area.

The Wyold Aspen Studio & Gallery, headquartered at 102 West Bridge Street (Saratoga), showcases an eclectic mix of local and out-of-the-area artists, including nine (9) local artisans (www.wyoldaspensstudio.com), and features the working studios of four area artists: Suzanne Blair - Dimensional works in handmade paper - luminarias. Judi Miller Morris - Original watercolors and oils, monoprints, photography. Kevin O'Brien - Landscape paintings in acrylic and oil pastel - pet portraits. Jerry Wood - Carvings in wood, alabaster, marble and slate.

A community survey conducted by the Platte Valley Arts Council identified 142 local artists and craftsmen. Among its varied activities, the Council offers workshops on how

¹³ Georgia Rural Economic Development Center, *Best Practices and Strategies for Rural Economic Development* (East Georgia College, Swainsboro, Georgia), 1

to professionally market arts and crafts. These workshops and many other Council events are intended to pull talented artisans out of the closet.

During our interviews, NorthStar Economics identified a talented tile designer, ceramicist, potter, antler artisan, stain glass maker, and a guitar-maker presently living in the area. If affordable, quality art studio spaces (and other public-sponsored merchandising opportunities) were made available in the community, an initial collection of artists and craftsmen might be assembled to reside within the proposed Arts & Business Incubator. If effectively promoted outside the region, the arts incubator would attract expanded tourism and visitors to Saratoga – generating increased outsider visits, boosting artisan income, and helping bolster the quality of life and cultural diversity of Saratoga (critical New Economy building blocks). In a dynamic creative community energized by arts entrepreneurs, other aspiring artists will likely be attracted to the idea of moving to Saratoga.

It is important to note that economic development around the arts might not look like traditional economic development. It may take years for an art based business to become profitable. Artists may have to work other jobs (thus adding the talent in the local labor pool) to sustain their passion to establish a business around their art. Like any other business, art entrepreneurs may fail but those that are successful can generate meaningful incomes.

The potential economic impact of artists can be illustrated by looking at Door County, Wisconsin. This area is in northeastern parts of the state and forms the “thumb” of Wisconsin – a rural geography with population of about 28,000. Door County is a magnet for a wide variety of visual and performing artists that serve a regional tourism economy. In many cases, local artisans have formed small businesses and employ a number of artisans and apprentices. For example, a potter in Ellison Bay in the remote northern part of the county employs six potters and markets his products in Door County and Florida.

The Wyoming Women’s Business Center (WWBC) sponsored a recent entrepreneurial training program for low- and moderate-income female artists in Wyoming. The project goals, funded by federal TANF program funds, were to help talented artists form and organize artisan business enterprises in order that they might make a living from producing art. The program began with fifty (50) aspiring artists who received further personalized training at their individual crafts and were assisted completing business plans. Program graduates who completed business plans numbered some 16 artists. Upon graduation, the program provided startup business capital as grants. Training was provided by experienced professional artists, usually at out-of-state locations (i.e., Tennessee, South Carolina, and even Mexico).

When the arts training program was initiated, a WWBC training manager resided in Saratoga, along with four initial program participants. Two (2) program participants remain in Saratoga – these artists and other WWBC program participants may be candidates for establishing new artisan businesses within the proposed arts incubator.

Besides an arts incubator, annual art fairs, and other merchandising opportunities that might be developed at the town's planned community/convention center (and at the airport terminal), it will be important for Saratoga leaders who are pursuing community arts development to organize programs for identifying local contributors, sponsors, donors and benefactors for fine arts – perhaps managed through the Platte Valley Arts Council. The proverbial *starving artist* needs more than affordable space – without receiving somewhat consistent revenues from artwork sales and commissions, constructing a fledgling artist center in Saratoga is probably not possible.

A system, for instance, that connects a wealthy patron to an individual artist who that patron respects might allow for some potential consistency of art purchases for either personal consumption and/or donations of art pieces to schools, hospitals, not-for-profit organizations and charities. A donated art work could potentially obtain for the donor a federal income tax deduction for the purchase price paid for the art product. Many different kinds of arrangements with art patrons and benefactors are possible.

Being recognized as a regional arts center can boost the quality of life in a local community. The overall quality of life in an immediate locale becomes important to attracting creative class workers – the entrepreneurs and professionals who start or staff innovative growing companies.

Enhanced commerce in art products can boost the local economy and simultaneously expand the region's cultural activities and diversities.

Economic development and a community center

The Town of Saratoga has conceived, developed and packaged a bold vision for a multi-faceted community/convention center that can realize meaningful new business and economic development opportunities within the local community. The Platte Valley Community Center Joint Powers Board has already submitted its plan to the Wyoming Business Council with a project application to the Business Ready Community Grant (BRCG) Program in order to finance infrastructure improvements at the planned community center site.

As envisioned, the newly constructed and renovated facility will host a wide variety of community functions that should attract numerous tourists and outside visitors to the Platte River Valley. The ability to boost Saratoga's non-peak season hospitality, recreation and restaurant businesses for the remainder of the calendar year is a strong project benefit. This dual-purposed community and convention center can potentially supply meaningful direct employment and business services to the Saratoga community, through hosting the Chamber of Commerce office, group meetings and convention coordination, food preparation & catering, and business center services. The community center will add to the quality of life in Saratoga making the community more attractive to potential employers.

This project was conceived, in a large part, through a 2000 *community assessment* of Saratoga conducted by the Wyoming Rural Development Council.

Members of **Saratoga 3000**, the group formed to put the community assessment into practice, spent the next year interviewing community members about what the proposed community center should include. In 2002, the group joined forces with the Town of Saratoga and Carbon County to form the Platte Valley Community Center Joint Powers Board (PVCC JPB) in order to build, maintain and operate the community center facility.

In the Great Divide Economic Development Coalition CEDS report that was published on July 1, 2002, a community/convention center was again identified as a needed tool for economic development in Saratoga.

Yet, the fullest confirmation of public support for the proposed Saratoga community center materialized in May 2003, when Carbon County voters approved an optional "Sixth Penny" sales tax for local capital improvement projects. The tax passed almost two votes to one. Of these tax funds raised, \$1.4 million was dedicated to the Platte Valley Community Center.

The proposed Community Center has been designed as a \$6.5 million high quality, multi-use community facility – able to host recreation activities, social gatherings (parties and banquets), large and small meetings, small business/entrepreneurial educational seminars, conventions, special exhibits, receptions and high quality performing arts events all under one roof. The final site plan includes using portions of the recently abandoned Saratoga Middle School.

The Center is mostly comprised of three fundamental spaces: (1) a multi-purpose room that is adjustable with moving partitions and that can accommodate 300 people with tables; (2) meeting and class rooms that offer computer stations and a/v equipment which are able to seat around 70 people per room; and (3) the theatre that can seat 400 patrons. In addition, the facility will have a full commercial kitchen with the ability to accommodate large groups. Local restaurants can do catering on-site.

The facility will also function partially as a business incubator: a one-stop shop for access to copiers, the Internet, compressed video, a commercial kitchen, and/or a professional location to meet with colleagues and clients.

The immediate area's natural beauty and multiple recreation opportunities are amenities not offered by many facilities. It is the intention of the Community Center Joint Powers Board to create a full performing arts auditorium with outstanding acoustics, seating, and back stage facilities. Community Center design will accommodate these uses and more.

As currently planned, the Community Center will offer numerous kinds of opportunities for local small businesses and entrepreneurial development activities, particularly the computer terminals, meeting spaces, and the access to photocopying, faxing, and other business services. According to the Greater Divide District CEDS report, significant numbers of Carbon County residents are sole proprietors, or small business owners that have no employees. In 1999, the CEDS reported 1,074 non-employer business establishments in the county. The entrepreneurship boosting abilities of the Platte

Valley Community Center should aggressively and actively assist as many small business owners as possible within the local region.

As the convention and large meeting functions of the Community Center draw larger numbers of outside visitors to the Platte River Valley, the community center itself should become a key vehicle for promoting and marketing area business establishments. Local restaurants, retail shopping, hotels and motels, float trips, golf courses, outfitters, snowmobile rentals, and bed & breakfast accommodations could be advertised – and potentially be made available via the Internet and thru local phone service to the visitors at the community center. Many types of businesses could be effectively presented at two (2) or more circular, quality photography, computerized kiosk stations in the hallways of the community center. A kiosk of the same design and function should be prominently located at the Shively Field airport terminal.

In addition, there are immediate opportunities offered by the Community Center that should catalyze the formation of new startup small businesses. For instance, the potentials offered by a full commercial kitchen being available to local residents on a flexible rental basis should energize area entrepreneurs interested in catering, banquet and reception preparation and coordinating services. These professionally organized events might take place either at the community center or elsewhere locally, including at churches, private homes, fraternal lodges, etc.

More importantly, the Platte Valley Community Center can become the major community focus for promoting awareness of Saratoga, WY as an “Enterprising Town”. As visitors from around Wyoming (and out-of-state) participate in special events at the Community/Convention Center, they will understand that special business development activities are taking place in this unique and beautiful community.

The new Community Center will help many outside people recognize the opportunities and attractiveness of living and working or operating businesses in Saratoga. And these outside visitors can become “economic ambassadors” for Saratoga in their own communities and business networks

An Entrepreneurship Development Strategy

Lean economic times often provide the impetus for rethinking economic development policies and practices at the local, state, and national levels. Through much dialogue and recent analysis, *entrepreneurship development* is now recognized as a promising *strategy* for rural communities faced with obstacles that make more traditional development approaches less viable.

Researchers and practitioners have laid the current groundwork for a better articulation of the entrepreneurship realm in rural America.

Center for Rural Entrepreneurship

The Rural Policy Research Institute (RUPRI) and the Kauffman Center for Entrepreneurial Leadership (KCEL) are working to assist rural economic development

through establishing a Center for Rural Entrepreneurship (CRE).¹⁴ The mission of the Center for Rural Entrepreneurship is to provide opportunities for sharing and learning among practitioners, researchers, and policy makers committed to encouraging rural entrepreneurship in the United States.

The Center for Rural Entrepreneurship works to identify development strategies that create sustainable, entrepreneurial rural communities ready to meet the challenges of the new economy. The Center strives to add value to the ongoing programs of its rural community partners by bringing people together to share research and best practices.

The following organizations are *collaborating partners* engaged in long-term projects with the Center for Rural Entrepreneurship:

- [Heartland Center for Leadership Development at Lincoln, Nebraska](#)
- [Center for the Study of Rural America at the Federal Reserve Bank of Kansas City](#)
- [Corporation for Enterprise Development in Washington, D.C.](#)
- [The Nebraska Community Foundation](#)

Economic Development Challenges in Rural America

The challenges that have been confronting rural communities suggest the need for a new approach to economic development. Traditional economic development activities such as industrial recruitment possess limited potentials to promote economic development in all but a few rural communities.

An alternative to more traditional economic development strategies is a community-based strategy that focuses resources that encourage entrepreneurs in the private and public sectors.

From a national perspective, there is evidence of strong positive linkages between entrepreneurship and economic growth. The Global Entrepreneurship Monitor (GEM) project concluded that “among nations with similar economic structures, the correlation between entrepreneurship and economic growth... is highly statistically significant.”¹⁵ Does this same correlation of entrepreneurship and economic development exist in rural communities?

The Kauffman Center for Entrepreneurial Leadership has been an important advocate for the encouragement of entrepreneurship, and the Center’s commitment to understanding rural entrepreneurship issues is reflected in its creation of the Rural Entrepreneurship Initiative. REI has conducted significant fieldwork on entrepreneurship issues in Maine, Minnesota, Missouri, Nebraska, Nevada, and West Virginia. The completed fieldwork

¹⁴ The rationale for and focus of the national center were developed and refined with the input of an advisory group representing organizations and individuals directly involved in research and practice related to rural entrepreneurship. These inputs were gathered during a November 2001 meeting in Kansas City hosted by the Kauffman Foundation.

¹⁵ Andrew L. Zacharakis, William D. Bygrave, and Dean A. Sheperd, *Global Entrepreneurship Monitor 2000*, Executive Summary Report, p. 4, www.entreworld.org.

supports the conclusion that most rural Americans have a propensity to be much more entrepreneurial.

Although rural residents have skills and experiences related to potentially being entrepreneurs, the REI fieldwork concluded that cultural, social and individual barriers often limit entrepreneurial activities of rural residents. The fieldwork, especially related to high growth enterprises, did conclude that some required entrepreneurial talents are generally lacking in rural areas. While rural people in America are engaged in many entrepreneurial activities, fewer rural residents are creating genuinely successful entrepreneurial enterprises compared to urban Americans.

Given the *GEM 2000* conclusions, the reality may be that broad economic sustainability of many rural communities depends upon the willingness and ability of rural leaders to implement entrepreneurship development strategies within rural places.

Wealth Creation Strategies

A fundamental goal related to pursuing rural economic development should be the creation of wealth owned by community residents. Entrepreneurship development strategies, in contrast to industrial attraction initiatives, work to actively build wealth amongst community residents and increase the chances wealth will be retained within a community. In addition, the creation of several diverse entrepreneurs within a community helps to overcome dependency on sectors like routine manufacturing and agriculture often heavily concentrated in rural areas.

Entrepreneurship development should do more than create individual entrepreneurs. Within a local community, these entrepreneurs give back to the community through leadership, including serving as role models for other entrepreneurs, and are much more likely to reinvest into a community. These positive externalities are less likely to be created through the attraction of a large corporation business to a rural town.

According to Lichtenstein and Lyons' *Entrepreneurial Development System*, "the primary mission of enterprise development must be to develop entrepreneurs. The secondary challenge is to provide the services necessary to help those entrepreneurs become successful."¹⁶

A dynamic entrepreneurship development strategy starts with the entrepreneur, identifying potential entrepreneurs, providing skills to help people realize their entrepreneurial potential, and empowering individuals to explore ideas and exploit opportunities to create their own businesses and build wealth. An important community role includes a full range of support services for the entrepreneur, including support systems that engage the entrepreneur in a long-term, interactive, "learning by doing".¹⁷

¹⁶Gregg A. Lichtenstein and Thomas S. Lyons, "The Entrepreneurial Development System: Transforming Business Talent and Community Economics," *Economic Development Quarterly*, Vol. 15 No. 1, February 2001, pp. 3-20.

¹⁷Lichtenstein and Lyons, p. 10.

Entrepreneurs will flourish in a supportive environment that recognizes the importance of entrepreneurs within the local community and acknowledges their achievements.

Additionally, when local communities pursue entrepreneurship development strategies, *social or public entrepreneurs* are usually significantly involved in building genuine entrepreneurial communities. These entrepreneurs are normally operating not-for-profit organizations or community philanthropic entities. Just as entrepreneurship requires private entrepreneurs, robust entrepreneurial activities within small communities often need assertive social or public entrepreneurs by helping create environments that support other private entrepreneurship.

Historically, rural policy issues have been synonymous with agricultural policy. However, most rural residents and economies are no longer solely defined by their connection to agriculture. As a result, public debates focused on farm subsidies will have little impact on the future of most rural communities. "Today's rural public policy is not the product of contemporary, thoughtful, and informed public debate,"¹⁸ state some experts. Increasingly, entrepreneurship development strategies are entering rural policy discussions at the local, state, and national levels.

Entrepreneurial Development Strategies at Saratoga, WY

To become an "enterprising town", Saratoga should consider implementing three (3) interrelated economic development strategies:

1. Organize a local *equity-type capital investment fund* that will invest in new and existing entrepreneurial business ventures.
2. Plan and build an innovative *Arts and Business Incubator*, an enterprise fostering and business development facility that can provide aspiring commercial artists and entrepreneurial small businesses with affordable operating space, shared support services, and helpful business assistance services.
3. Launch a 25-40 person *community entrepreneurial coalition* whose members serve as volunteer facilitators assisting local enterprises at overcoming multiple startup enterprise problems (i.e., licensing, zoning, financing, etc.). This initiative could be achieved through a **Planned Approach to Community Entrepreneurship (PACE) Program** designed by the Ewing Marion Kauffman Foundation. [This Kauffman Foundation model is being sponsored in state by the Wyoming Small Business Development Center (SBDC) Program in order to spur enhanced entrepreneurship through enlarging community involvement].

From interviews for this economic report, NorthStar Economics has learned that socially committed contributions have been provided to important Saratoga community projects and to select for-profit entrepreneurs from private contributor sources. As beneficial local public projects have demonstrated – like the Corbett Medical Building and the

¹⁸5 Karl N. Stauber, "Why Invest in Rural America," in *Exploring Policy Options for a New Rural America*, Federal Reserve Bank of Kansas City, 2001, pp. 9-29.

Platte Valley Community Center – NorthStar Economics believes that additional local financial contributors can be identified who might make investor capital available to other promising area community development projects and to occasional business enterprises.

These potential business investors will usually prefer to remain anonymous. It is incumbent, therefore, on the Town of Saratoga and its Impact Joint Powers Board to design an appropriate **New Enterprise Fund Program** that will invest directly as a program into fledgling enterprises and/or would facilitate individual investors themselves investing into local growth business opportunities. This initiative needs to be a sophisticated undertaking that identifies and manages a “deal flow” of prospective investment opportunities that combinations of wealthy local resident investors will find attractive.

As may be negotiated with prospective local investors, the **Enterprise Fund** would provide support services for identifying, analyzing, and processing a variety of investment opportunities that are now located in or might be attracted to Saratoga. The Enterprise Fund will need to directly provide or to subcontract for *investment review* and *due diligence* services pertinent to processing an assortment of deals. These professional services would assist local investors with initial and follow-on financial decision-making rounds, besides providing on-going investment portfolio oversight.

The Enterprise Fund will function similar to “angel networks” currently operating in many communities around the United States. These *angel-type groups* can assist individual investors make autonomous investment decisions on each separate investment deal or they can help the overall investment organization itself make a collective decision jointly whether to invest or not. These joint decision-making *angel entities* usually operate as limited liability corporations (LLCs) when pursuing collective group investments.

Establishing a local business incubator can help young businesses survive and prosper during their start-up phases when these firms are most vulnerable. Incubators typically offer their business tenants a wide range of shared services and access to professional assistance. These shared services might include: secretarial, receptionist/answering services, photocopying, telecommunications and computer equipment access, conference rooms, and joint accessibility to discount purchases of health insurance, office supplies, etc.

A *community coalition* serving the area, modeled on the Kauffman PACE Program, would operate in concert with existing economic development efforts to assist local entrepreneurs. Local residents volunteering for coalition activities would work through a community-based board to provide free, confidential, business management and networking advice to aspiring entrepreneurs and existing businesses. To faster build the community coalition, a full or part-time Enterprise Facilitator could be hired by the local board to recruit, train and coordinate the work of local volunteers in order to better assist local businesses.

Since the future of every community lies in the dreams and aspirations of local people, the community coalition mission would be to promote economic revitalization by capturing the passion, intelligence, imagination and resources of local entrepreneurs.

This community program would also serve as a catalyst for enhancing civic spirit and community pride.

If the Town of Saratoga makes progress building its *entrepreneurship development strategy*, then State Director Diane Wolverton of the Wyoming SBDC Program (phone: 800-348-5194; email: ddw@uwyo.edu) has indicated a strong interest in working to implement a PACE Program. The Town of Saratoga should further consider assistance that might be available from the Center for Rural Entrepreneurship (CRE) and the Heartland Center for Leadership Development (HCLD), both headquartered in Lincoln (NE), and the Kauffman Center for Entrepreneurial Leadership (KCEL). The Nebraska Community Foundation (NCF) offers interesting models for realizing locally directed strategies that can realize community philanthropy and local economic development, and NCF should also be explored for potential community development strategies in Saratoga.

Economic Development and Enhanced Deal Flow

The University of Wyoming is a potential source for deal flow to create investment opportunities in Saratoga. The University of Wyoming at Laramie is the only four-year degree granting higher education institution in the state. Even with a modest public university enrollment of 12,238 students (Fall 2004), the University has become a remarkable generator of outside research funding (\$61 million research in fiscal 2004).¹⁹ UW-Laramie is classified as a Carnegie Foundation Research II university (34 higher education institutions reached the Research II classification) and is one of the smallest public institutions to achieve this designation.

The current level of research funding is an indication of the quality of UW-Laramie professors and research staff and their ability to compete for federal research contracts. The University has received annual increases of federal (NIH, USDA, National Science Foundation, DOE, etc.), private industry, and state research funds for 19 consecutive years.

The University has two programs that the Town of Saratoga should explore. The Wyoming Research Products Center (RPC) was launched, in 1999, to provide resources that can foster Wyoming technology business development. Serving as the university's ***technology transfer office***, RPC was established as a collaboration between the University of Wyoming Research Office and the Wyoming Business Council to provide technical assistance to UW faculty and private inventors statewide for transforming technology discoveries into commercially marketable products and services.

"Technology transfer" is the process of protecting, marketing and transferring intellectual property to private companies for commercial purposes. To obtain economic value from scientific and technology discoveries, also known as intellectual property or IP, there must be a process to protect ideas and in turn find commercial applications

¹⁹ For each \$60 million in university research, there tends in the United States to be one new commercial business launched, according the Association of University Technology Managers (AUTM).

that have economic value. Stronger technologies are typically licensed by *technology transfer* offices, such as RPC, to private companies for further commercial applications (RPC can take equity positions in companies in lieu of commercial licenses).

A university technology transfer office will usually provide protection for intellectual property through securing appropriate patents, copyrights, and trademarks. The Wyoming Research Products Center provides these services for both publicly-owned and private technologies in Wyoming.

RPC provides its services for free to outside (non-university) inventors to help them patent, improve and commercialize technology discoveries. Since June 2003, the University has assisted 33 outside inventors in four (4) southeastern Wyoming counties (including Carbon) with their invention disclosures. The outside inventor(s) retain 100% ownership rights over their technology commercialization activities through a non-disclosure agreement with RPC.

More information about technologies available for licensing and their commercial application is available from the following source:

152 Education Annex (physical address)
Dept. 3672; 1000 E. University Avenue (mailing address)
Laramie, WY 82071
(307) 766-2509
Website: <http://uwadmnweb.uwyo.edu/rpc/>

With the Wyoming Research Products Center offering *tech transfer* and *product licensing* nearby, creative economic development opportunities become workable in Saratoga, WY. Like innovative wood products developed by the USDA Forest Products Laboratory, these University of Wyoming *technology transfers* can offer to Saratoga a prospective “deal flow” of business development opportunities.

A strategy for Saratoga leaders to engage the Wyoming Research Products Center might start with the **formation of a task force** comprised of experienced Saratoga businessmen and town leaders who would periodically meet with university officials responsible for UW research programs and technology transfer functions. The purpose of these meetings would be to discuss UW technology opportunities. Building relationships between Saratoga leaders and the University of Wyoming, including UW’s multiple small business assistance programs (i.e., SBDC, SBIR, MAMTC, etc.) would be one of the most important development steps the town could make.

As an “enterprising town” that is able to offer *incubator space* and *venture capital financing* to its business prospects, Saratoga would be in a strong position to attract new high tech startups. [NOTE: There are NO private venture capital partnerships, small business investment companies, community development venture funds, nor angel networks that currently operate in Wyoming – a considerable competitive advantage that Saratoga might build for potentially attracting young businesses.]

The University of Wyoming offers a second opportunity for Saratoga entrepreneurial endeavors, through the construction of the **Wyoming Technology Business Center (WTBC)**. WTBC will be a technology-oriented small business incubator located in Laramie and will provide the research capabilities of the University to promote new and growing businesses *throughout Wyoming*.

The Wyoming State Legislature and Governor Freudenthal approved \$5.3 million for constructing the Wyoming Technology Business Center on the UW campus, contingent on the University of Wyoming securing a non-state match of \$3.18 million. UW secured matching funds from the federal government with a \$1 million grant from the Department of Housing and Urban Development (HUD), combined with a \$1.6 million grant from the U.S. Economic Development Administration (EDA). The full matching requirement was achieved with a \$1.6 million donation from UW alumni and Casper philanthropists Mick and Susie McMurry.

"While the WTBC will be located in Laramie to take advantage of the University of Wyoming's unique strengths in basic and applied research," announced UW President Philip Dubois, "it will be an important economic development tool for the entire state of Wyoming.... The WTBC will provide entrepreneurs with the expertise, networks, and tools they need to make their ventures successful."

WTBC programs can assist entrepreneurial endeavors initially undertaken in Saratoga by helping businesses access UW-Laramie research and connecting enterprises with networking assistance provided through the new Laramie incubator. Saratoga can add to its economic development strategies by accessing business opportunities initially nurtured at the WTBC incubator.

Businesses that graduate from the WTBC incubator will typically need high-quality, well-designed business space **or** may need developmental venture capital to reach next stages of entrepreneurial expansion. Saratoga can potentially offer resources that a genuine "enterprising town" would be pleased to provide to numerous growth businesses.

Chapter 7-Observations, Conclusions, Recommendations and Priorities for Economic Development in Saratoga

Observations:

It has been a pleasure to work on this project. The people we have met in Saratoga, Laramie, Cheyenne, Rawlins and other parts of the state have welcomed us and openly shared information and data. From these interactions and our research we offer the following observations:

- There is a general consensus that Saratoga needs to have an economic development plan to diversify and strengthen the local economy.
- There is a good base of economic research and studies including the study done by Mary Randolph's group that supports the development of a strategic plan and future economic development action steps.
- There is support for economic development in Saratoga at the community, county and state level.
- The Town of Saratoga is judged by many in the state as having very high economic development potential.
- The LP mill and the mill site are valuable economic assets that could drive future economic growth.
- The Saratoga airport, Shively Field, is an important economic asset not usually found in a rural town with a fairly small population.
- The migration of retirees from the Front Range of Colorado is having an economic impact on land prices and could be a very important economic driver during the next ten years [servicing the retirement and assisted living needs of a rapidly aging population will offer numerous service business entrepreneurial opportunities].
- The region around Saratoga is attracting seasonal residents who have high income and wealth characteristics.
- The natural resource base around Saratoga consists of an ample supply of lodgepole pine. This timber supply is plentiful but its availability is heavily dependant on the actions and policies of the U.S. Forest Service.
- The Saratoga (free access) public hot springs are an important economic asset and "quality of life" feature not found in many American communities.
- The North Platte River is an important natural asset that also has potential as a consumer brand name.

Conclusions:

We believe that the Town of Saratoga and the surrounding region have very high economic development potential. The town has substantial infrastructure assets like the LP site and Shively Field, outstanding scenic beauty and relationships with nature, and deeply committed public and behind-the-scenes community leaders.

Recommendations:

Option 1: A public private partnership to help the existing sawmill get back into business and become competitive

The existing and currently idle sawmill can be the largest economic asset in Town and its reopening could produce between 100-200 jobs in the community. Chapter 3 covers the feasibility of reopening and sustaining the sawmill in detail. There is risk in investing in any project that relies on cyclical markets for finished goods (lumber) and raw materials (timber). The existing sawmill in its current state has been marginally competitive in the current lumber market.

Option 2: A public investment in the development of a business sites and possible incubator space at Shively Field

In our view, Shively Field is the second biggest economic asset in Saratoga. The airport already has a significant economic impact on the area. But in many ways it is the most underdeveloped economic asset in Town. The airport is a general aviation field that has a combination of land, existing infrastructure and high-income visitors and users. We think that the airport visitors constitute a very rich niche market that could be further tapped to increase local sales and business. We also think that the airport site could attract new businesses. In our research of other general aviation airports around the country, we found that several airports had aggressive economic development strategies to attract 1) aviation related businesses and 2) aviation oriented business owners. This latter category of business owners are pilots who run businesses and either use the aviation as part of their business or locate near an airfield as a quality of life issue.

Presently, the airport lacks the basic sewer and water infrastructure to accommodate businesses that could be attracted to the site. There have been a few inquiries or failed start-ups in the past but there is little point in attracting businesses if the airport lacks the basic infrastructure to support new buildings and businesses.

Any development of the airport should be viewed in a 5-10 year timeframe. There may be marginal gains in employment from existing businesses but it will take some time to get FAA and other approvals for this proposed development. But based upon what we have seen at other airports, many of which do not have the assets now available at Shively Field, an infrastructure investment that would enable business development at the airport would have a large payback in 5-10 years.

Our recommendation would be to provide sewer and water to one of the two available sites that lie north and south of the existing runway. With this investment and investment in access roads to the site, a business park that would house light industrial, service and other businesses would be feasible.

We think that this idea might receive local investor support if the right marketing plan were put into place. The investor support would be needed to build one or more buildings that could house or incubate start-up businesses.

We also think that a second phase of the airport development might include an incubator site for new and relocating businesses. An incubator would have to offer more than space and would need to have some business support services such as management coaching and technical support. Funding for this second phase might come from a number of sources. Other state and federal resources, such as U.S. Economic Development Administration grant programs, might assist successfully launching a local incubator facility or business park development. State funding for planning and community infrastructure improvements is available through the Community Development Block Grant (CDBG) Program and the Business Ready Community Grant (BRCG) Program that are both administered by the Wyoming Business Council (WBC).

We also believe that the business park could and should have a “signature” that makes it unique in the region. We advance two ideas for a signature development at the airport business park. One idea we would suggest is an Arts and Business Park. This would create a mix use situation in which arts and design firms might be tenants along with light manufacturing and professional services. Such a facility would take advantage of what appears to be a growing number of artisans in the area who could form the core of potential occupants for part of the new structure.

Launching an incubator facility that immediately has tenants who themselves generate intensely creative and visible activities can build important project energy and site occupancy momentum. These dynamics should boost “quality of life” components in the community, as well as enhance outside visitor potentials. While we found arts and business parks in several urban areas we haven’t discovered any at an airport or many in rural locations. We think it more likely that local investors would be interested if the arts were part of the development plan.

The Arts and Business Park idea also could be a good example of synergy between the airports existing business and future economic development. As we have said before, the visitors and seasonal residents that use the airport have relatively high income and wealth levels. Correspondingly, this demographic also has a high level of discretionary income that could feed arts businesses established in close proximity to the arrival and departure of airport clients.

This “Arts and Business” incubator idea may go too close to the edge but it is worth thinking about. A conventional business park could still be built without the arts component but it too would need a strong marketing plan to get traction for businesses to move to the site.

A second idea that we think is worth a look is to brand the incubator and to build varied businesses around the brand name "North Platte River Valley". As we talk to people outside of Wyoming about our work in Saratoga, the mention of the "Platte River" immediately draws attention. Many people know the Platte in terms of the annual bird migration in Nebraska. Others know something about the historical significance of the Platte in the opening of the West. In any case, the Platte has name recognition and could be a brand for many products that are outdoor related consumer products.

The idea for this brand name came from the Wyoming Business Council's "Benchmarking Target Industry Analysis for the State of Wyoming", a study done by Deloitte & Touche, LLP in March of 2000. That study targeted five "near term" industries that might be developed in Wyoming. One of those targets is "High-end Customized Outdoor Consumer Products and Apparel". The possibility of building businesses around an established brand name aimed at the outdoor market seems a natural for Saratoga and the North Platte River.

Option 3: The acquisition of the LP mill site and the conversion of that site into an industrial park

The ideal use of the LP mill is explained in Option 1 above. If this option is not feasible because of the abandonment of the railroad, the reluctance of the existing owner to restart the plant or any other reason, then we believe that the site has great potential as an industrial park. The basic utilities run into the site and there are existing buildings that may be useable. If the site cannot be restarted as a sawmill, then we would recommend that the site be acquired and redeveloped as an industrial site.

The potential to redevelop the site is covered in detail in Chapter 4. The site offers a good infrastructure but there are limitations as to what looks economically feasible on the site. Because of distance to market and the relatively high cost of raw material and finished-product transportation, many traditional manufacturing uses would not be feasible.

The best prospects for industrial development at the mill site involve forest products. Our research and conversations with the U.S. Forest Products Lab in Madison, Wisconsin uncovered a host of forest related products that could be manufactured in the Saratoga area. More importantly, we discovered that the Forest Products Lab will send a team of consultants to a community that has a site and timber resources to assess the economic potential and options for that site. From what we saw at the Forest Products Lab, we believe that they would be a valuable and low costs resource should the community acquire the mill site.

The U.S. Forest Service District Office has also indicated a willingness to underwrite further investigation of alternative uses of the mill site that are related to the use of local timber resources and related to local entrepreneurial activity involving wood products.

Our research also turned up other ideas for the mill site. These include the following manufacturing operations that would use raw material from the area:

- A wood lamination plant that would produce I-beams or other engineered wood products that is similar to an existing facility in Sheridan, Wyoming. [See related product testimony and Forest Products Laboratory publication in Appendix B and C respectively.]
- A manufacturing operation that would produce composite molded roofing materials resembling cedar shakes, Spanish tiles, or slate utilizing recycled plastics and natural fibers. [See related products in Forest Products Laboratory publication in Appendix D.]
- A milling operation that would produce trim, molding or other value added wood products.

Priorities:

The three options outlined above are in the order of the priority we would assign to economic development in Saratoga. The sawmill is the community's biggest financial asset. The reopening of the mill would provide the most immediate economic impact in terms of job creation.

The airport project is a longer-term idea but it holds the potential to have a large impact as well. The airport already has a good client base and may attract additional attention as a place to base private planes and to operate aviation related businesses and non-aviation businesses.

Finally, the acquisition of the mill site and its development as an industrial park would be our third priority. This option would also take some time to realize job gains but would likely be faster than the airport development if it is packaged and marketed effectively.

Chapter 8- Planning for Future Business Ready Community Grants

One of the objectives of this study is to prepare for future grant applications to the *Wyoming Business Ready Community Grant and Loan Program*. There are three types of grant categories under the program. There are grants for

- 1) Community readiness
- 2) Business committed projects
- 3) Community enhancement

The intent of the community readiness projects grant area is as follows:

The primary intent of this program is to ready a community for new business development through economic development projects such as the purchase of land, telecommunications infrastructure, rights of way, airports, sewer and water projects, roads, or facilities for labor force or entrepreneurial training.

The intent of the business committed projects grant area is as follows:

The primary intent of this project type is to provide funds to build infrastructure in a community in which a specific business has committed to locate or expand.

The intent of the community enhancement project grant area is as follows:

The primary intent of this program is to improve the quality of life within a community in order to make it more attractive for business development. Examples of enhancement projects include recreation facilities, landscaping, or convention centers.

Counties, incorporated cities, towns and joint powers boards may apply for grants. The maximum amount of the grant is \$1,500,000 and grant applicants must have a match with grants over \$250,000 requiring a 10% match of eligible costs. Full details of the grant application process can be found online at the Wyoming Business Council website at www.wyomingbusinesscouncil.org.

Business Ready Grant Opportunities

There are three basic economic development options discussed in Chapter 7. Each of those options has one or more fundable projects that would help to implement the recommendations we make in the previous chapter. Below we describe one or more possible candidates for Business Ready Grant funding.

Option 1: Restarting the Sawmill

The railroad is a key element to the economic feasibility of the Saratoga sawmill. Recently, the owners of the railroad were seeking to abandon the line. There may be an

opportunity for the Impact Joint Powers Board to acquire the line and then lease its operation to the sawmill or interested parties. This idea has been discussed with state officials and is at least a preliminary candidate for Business Ready funding.

Option 2: Development at Shively Field

Development of two sites at Shively Field fits the Community Readiness Project category of the Business Ready Grant program. Airports, water and sewer and roads are all examples given in the statement of intent for Community Readiness Projects. A project that would provide sewer and water and access roads to one or both sites would seem to be a natural first phase in developing the airport.

A second phase project could be the building of a business incubator site at the airport. This might fit the “entrepreneurial training” example in the statement of intent. Incubators are also popular projects for the U.S. Economic Development Administration (EDA) and funding might be sought from that agency.

Option 3: Purchase and Development of the Mill Site

If the mill is not restarted, then the mill site should be purchased and developed. The Community Ready Project category of the Business Ready Grant program uses “land purchases” as a specific example of the intent of the grant program. The Impact Joint Powers Board could write a grant to purchase the mill site and to develop necessary access roads and other infrastructure to accommodate multiple businesses.

Option 2 and 3

If businesses can be identified that would locate at either the airport or the mill site, then the Business Committed Projects of the Business Ready Grant program could be tapped to provide infrastructure and improvements that would assist a new business.

Other Community Planning Requirements

A Community Readiness Project application must demonstrate that appropriate planning has been conducted and capacity exists to accommodate new business development to insure the success of a proposed site development project. If submitting a Business Ready Community Grant (BRCG) Program Application, a community is requested to attach relevant portions of community plans, studies, and workforce development plans to help answer *Community Information* questions on the application.

For instance, how does local labor force availability compare to the demand for labor should a Business Ready project be successful? Has the community or businesses within the community already pursued training programs for the local workforce? If not, is there an organization able to provide workforce education and training?

The Sweetwater and Carbon County CEDS Report covers many of the required economic development planning steps for a BRCC grant, but the Town of Saratoga has not prepared a recent labor force availability study. A labor force availability study would include the following:

- unemployment rate
- underemployment rate
- wage distributions
- commuting patterns
- skill availability
- educational levels.

Some good sources of information for a labor force availability study would include the following:

- Equality State Almanac
<http://eadiv.state.wy.us/almanac/almanac.asp>
- Regional and County Occupational Wage Projections (EDS) 2002
<http://doe.state.wy.us/lmi/20024pub/TOC000.HTM>
- Local Area Unemployment Statistics
<http://doe.state.wy.us/lmi/la us/toc.htm>
- Census Bureau
www.census.gov

Section V. of the Community Readiness application also asks for other data such as the community's population and housing. Communities are encouraged to answer the questions as completely as possible by using state resources or special studies that were previously prepared.

The Town of Saratoga might decide to pursue professional assistance for assembling the required population, workforce, and/or housing information. Grant applications for "Planning Only" community projects can be made to the federal Community Development Block Grant (CDBG) Program administered by the Wyoming Business Council in order to retain professional assistance.

Conclusion:

We believe that this report and the documents cited in Chapter 2 provide a strong base for future grant applications to the Business Ready Grant program. They also provide the basis for applying to other funding sources such as the EDA. These funding sources provide a means to implementing those recommendations in this report that the Impact Joint Powers Board selects.

Thank you for the opportunity to work for the Impact Joint Powers Board. We hope that our work is valuable to you as you go about the important work of building the economy of Saratoga, Wyoming.

Appendix A – Project Interviews

- Interview. June 2004. William Gern, Vice President for Research, University of Wyoming, Laramie, WY.
- Interview. July 2004. Tucker Fagan, President & CEO, Wyoming Business Council, Cheyenne, WY.
- Interview. July 2004. Richard Marble, Financial Adviser, Office of the Governor, State of Wyoming, Cheyenne, WY.
- Interview. Kevin Paintner, President – Cheyenne/Laramie, Community First National Bank, Cheyenne, WY.
- Interview. August 2004. Bill Crapser, State Forester, State School and Land Board, State of Wyoming, Cheyenne, WY, and former Lumber Mill Manager/Forester, Louisiana-Pacific Corporation, Saratoga, WY.
- Interview. August 2004. Beth Worthen, Senior Policy Analyst, Office of the Governor, State of Wyoming, Cheyenne, WY.
- Interview. August 2004. John Freeman, Planning Staff, Office of the Governor, State of Wyoming, Cheyenne, WY.
- Interview. August 2004. Doug and Debbie Boykin, Owner/Operators, 44 Lumber & Timber Inc., Encampment, WY.
- Interview. August 2004. Kim Lorenzen, Saratoga Aviation, Shively Field, Town of Saratoga, Saratoga, WY.
- Interview. August 2004. Will Speer, Century 21 Cornerstone Realty, LLC, Saratoga, WY, and former Club Manager, Old Baldy Club, Saratoga, WY.
- Interview. August 2004. Diane Wolverton, State Director, Wyoming Small Business Development Center (SBDC) Program, University of Wyoming, Laramie, WY.
- Interview. August 2004. Kurt Bucholz, State Representative, District 47 Carbon/Albany, State of Wyoming, Encampment, WY.
- Interview. August 2004. Thomas O'Leary, former (retired) President & CEO, Burlington Resources Corporation and resident of Saratoga, WY.
- Interview. August 2004. Joe Glode, business owner/operator and Chair, Town of Saratoga Impact Joint Powers Board (Community Center), Saratoga, WY
- Interview. August 2004. Scott Armentrout, District Ranger, USDA National Forest Service, Brush Creek/Hayden Ranger District, Saratoga, WY.

Board Meeting. August 2004. Town of Saratoga Impact Joint Powers Board (Economic Development), Saratoga, WY.

Interview. August 2004. Randy Bruns, President, Cheyenne LEADS, Cheyenne, WY

Interview. August 2004. Steve Achter, Director, Investment Ready Communities, Wyoming Business Council, Cheyenne, WY.

Interview. September 2004. Jay Grabow, Executive Director, Carbon County Economic Development Corporation (CCEDC), Rawlins, WY.

Interview. September 2004. William Vasey, State Senator, District 11 Carbon/Albany, State of Wyoming, Rawlins, WY.

Interview. September 2004. Don Adams, former Lumber Mill Manager, Louisiana Pacific Corporation, Saratoga, WY.

Interview. September 2004. Hank Jewell, Mayor, Town of Saratoga, Saratoga, WY.

Interview. September 2004. Christopher Meyers, Intermountain Resources, LLC, Montrose, CO.

Interview. September 2004. Mary Flanderka, Senior Policy Analyst, Office of the Governor, State of Wyoming, Cheyenne, WY.

Interview. October 2004. Gary Erickson, Manager, Bighorn Lumber Company, Inc., Laramie, WY.

Interview. October 2004. Thomas Johnson, Regional Director, South East Region, Wyoming Business Council, Cheyenne, WY.

Interview. October 2004. Arlene Soto, Regional Director, Region IV, Wyoming SBDC, Cheyenne, WY.

Interview. October 2004. Harry Lovato, President, Carbon County EDC, Rawlins, WY.

Interview. October 2004. Shawn Reese, Manager, Investment Ready Communities, Wyoming Business Council, Cheyenne, WY.

Interview. October 2004. Alan Moore, CPA, Clifford H. Moore & Company, Riverton, WY, and President, IDEA Inc., Riverton, WY.

Interview. October 2004. Jeb Steward, Chair, Saratoga-Encampment-Rawlins Conservation District, Saratoga, WY.

Interview. October 2004. Mary Randolph, Executive Director, Wyoming Rural Development Council, Cheyenne, WY.

Interview. October 2004. Chris Risbrudt, Ph.D., Director, Forest Products Laboratory, USDA Forest Service, Madison, WI.

Interview. November 2004. Russell Waldner, Engineer, Carbon Power and Light, Saratoga, WY.

Interview. November 2004. Chuck Bartlett, Town Engineer, Town of Saratoga, Saratoga, WY.

Interview. November 2004. Patrick Lynch, Jones & Lynch Logging, Encampment, WY.

Interview. November 2004. Honorable Art Zieger, Chair, Carbon County Board of Commissioners, Saratoga, WY.

Appendix B – Schmidt Sawmill Testimony

**Testimony of Ernie Schmidt
President, Wyoming Sawmills, Inc., Sheridan, Wyoming
Before the U.S. Senate Committee on Small Business and
Entrepreneurship
February 19, 2004
Cody, Wyoming**

Thank you, Senator Enzi for the opportunity to testify before the Senate Committee on Small Business and Entrepreneurship about the role small business should play in maintaining forest health. I am Ernie Schmidt, President of Wyoming Sawmills, located in Sheridan, Wyoming. We are a small sawmill that produces about 40 million board feet of 2x4-stud lumber a year. We employ about 100 people directly and have up to 50 contract loggers.

Our approach to the forest health problem has been to focus on new and better lumber products that can better utilize our forest resources. We have been very successful in this effort. In fact we have successfully competed to win several small business innovative research (SBIR) grants from both the US Department of Agriculture and the National Science Foundation. These grants have enabled us to formulate beneficial partnerships with the University of Wyoming, Montana State University, the USDA Forest Products Laboratory in Madison, Wisconsin and large businesses like COE Manufacturing, one of the largest sawmill equipment manufacturing companies in the United States. Let me tell you about some of the successes we have had in developing new products. The lam-stud was our first product, it involves taking low-grade lumber and creating high strength structural lumber. This product has evolved into other related products using the same technology. Examples include lam-lumber and lam-headers, all of which are presently on the market. We continue to expand on this technology and are currently working on a modular building product based on the lam-stud technology.

We recently completed a project funded by the National Fire Plan through the USDA Forest Product Laboratory. This project researched the use of our lam-stud technology to help utilize small diameter crooked trees. The results are now published and are being presented worldwide by the Forest Products Lab. In fact this research was recently featured in the November 2003 Evergreen Magazine under an article titled "Giant Minds, Giant Ideas".

Probably the most exciting research we have worked on is the one through the National Science Foundation where we have developed the technology to take wood waste like material going into chips like these, and creating an innovative

new wood product that we call Structural Strand Lumber (SSL) that can be made into an I-joist like this. (see sample) The implementations of this technology is that 22% more of every log coming into a sawmill will produce usable structural lumber. This technology will create a major paradigm shift that will revolutionize the lumber industry. This was developed by a small business working with a large equipment manufacturing company, COE Manufacturing. This joist is stronger than the comparable joists presently on the market and it is made from low strength wood byproducts from a sawmill. It is a revolutionary idea. The next step in its development is to build a pilot plant to prove the production process. This is where we as small businesses are having some problems.

The main timber source closest to our sawmill is the Bighorn National Forest. The timber program has been so undependable in the last 10 to 15 years that no investor will invest the 7 million dollars needed to build the pilot plant in Sheridan. The results could be an idea developed by small business being implemented by a large business where the private timber supply can be guaranteed. I believe that would be tragic for all of us.

This is where a small business like ours needs the help of the Forest Service to forward this technology and ultimately benefit federal lands and forest health. We need a secure long-term timber supply to guarantee private investors an opportunity for their investment to mature. The Forest Service has talked about 10 year guarantees for new technology, so now is the time. We need something like a large stewardship contract; say 20,000 acres in suitable timberland that could guarantee a 10-year timber supply to move this technology ahead. The results would be new technology available for use to help all industry help the Forest Service maintain forest health. Once fully developed the SSL technology will enable existing sawmills to utilize more fiber and expand into smaller diameter trees in the future.

I see this type of activity at this scale presently being done on other vegetative management projects. Just recently an 18,000-acre vegetation management project was approved on the Bighorn National Forest. What I'm proposing is something similar only involving suitable timberland.

I believe it's time for the Forest Service to think outside the box and become more of a partner with industry to solve our national forest health problems. I hope my ideas can help this committee accomplish this goal.

Thank you for your time.

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Appendix C – Lam I-Joists Publication



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Forest Service

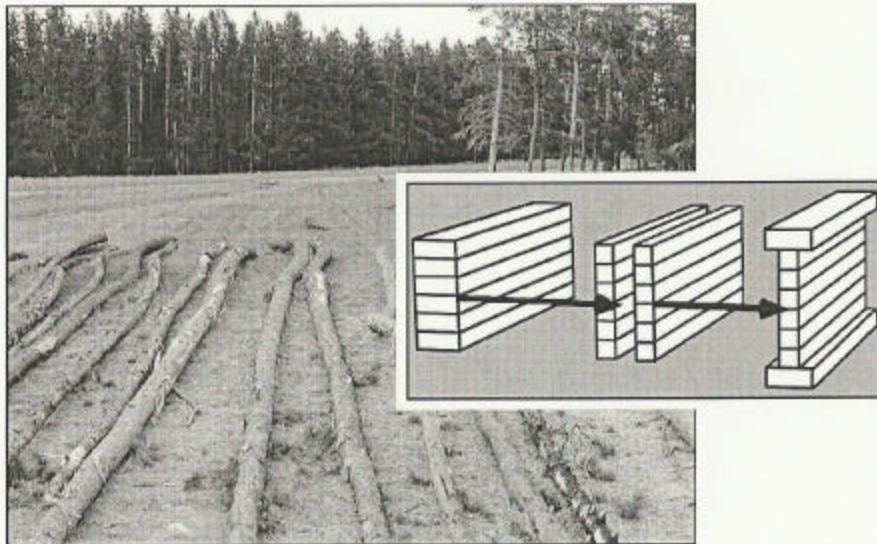
Forest
Products
Laboratory

Research
Note
FPL–RN–0291



Lam I-Joists: A New Structural Building Product From Small-Diameter, Fire-Prone Timber

John F. Hunt
Jerrold E. Winandy



Abstract

The goal of our research is to promote healthy and sustainable forests by developing value-added uses for curved and small-diameter trees. In typical North American logging or thinning operations, much of this low-value timber is felled and left on the ground, chipped, or burned because most mills are not equipped to handle it. By understanding the fundamental processing requirements for and the mechanical properties of curved and small-diameter material, we can gain insight into possible options for using this resource. Through cooperative efforts with industry, universities, and government institutions, we are working to use innovative technologies to investigate the potential for using an additional 8.5 to 17 million board feet per year of fire-prone "woody" fuel per forest unit for value-added products. In the study reported here, research was focused on processing small-diameter curved and cull timber into dimensional 2 by 4 studs and then converting that material into a value-added laminated I-beam, called LamLumber. This paper describes research to date on processing needs and basic research being conducted on small-diameter timber.

Keywords: laminated lumber, I-beam, small diameter

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Lam I-Joists: A New Structural Building Product From Small-Diameter, Fire-Prone Timber

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Introduction

Over the past 50 years, forest biomass has increased as a result of normal growth and the suppression of forest fire, which contributes to high forest fuel loads (Fig. 1a). In the absence of thinning, whether manually or by natural means, many of these forests have become prone to catastrophic forest fire, insect infestation, and disease. Moreover, the risk of loss of property and life through fire has increased dramatically with the expansion of the wildland-urban interface. The amount of residual hazardous fuel in these forests thus needs to be reduced.

During normal logging or thinning, many low-value trees are either left standing or are felled and left on the ground (Fig. 1b), chipped, or burned, because most North American mills are usually not able to handle this material. Much low-value material is also left in the forest because there are few or no local product options that can provide economic benefit through utilizing this material. This is a particular problem in many areas of the western United States, where forests are located far from metropolitan areas and

transportation costs are high. New value-added product options need to be developed for low-value material.

To address the problem of value-added options, the Forest Products Laboratory is cooperating with several Wyoming entities—Wyoming Sawmill, Inc. (Sheridan, Wyoming), Bighorn National Forest, Wyoming State Forestry Department, and University of Wyoming—Laramie, as well as Genesis Laboratories of Batavia, Illinois, to evaluate the processing and material properties of small-diameter and cull timber for potential use in laminated I-beams.

Background

The forest fire season of 2000 was the most costly on record for the United States, costing the government more than US\$1.36 billion (10⁹), with additional losses in private property. The 2002 fire season was nearly as costly.

In the wake of these fires, the general public called for the government to help reduce losses resulting from forest fires.



Figure 1—Comparison of suppressed and thinned forest stands. (a) Suppressed-growth stand before thinning, small-diameter trees spaced 1 to 1.5 m (3- to 5 ft) apart. (b) Thinned stand, trees spaced 2 to 3 m (6.5 to 9.8 ft) apart, approximately 15 years after thinning. Note significant dry slash residual on forest floor.

The U.S. Congress funded projects related to hazardous fuel reduction, including our work on the potential of using low-value small-diameter and cull material for value-added laminated products (Hunt 2000, Hunt and Winandy 2002).

The end-use engineering requirements and material properties of products made from small-diameter material determine the applications for which it can be used. Under normal growing conditions, small-diameter trees contain a high percentage of juvenile wood (first 5 to 20 growth rings). The strength properties of juvenile wood are significantly lower (0.45 to 0.95) than that of mature wood (Forest Products Laboratory 1999). However, in suppressed growth timber, the percentage of juvenile wood can be much lower than that of similarly sized faster-grown timber. Thus, if the suppressed growth rate is not too slow, i.e., not greater than 50 rings/in. (20 rings/cm) (FPL 1999), it is possible that a suppressed-grown timber might actually result in a high strength material, even though classified as small diameter.

LamHeader

We needed to show how innovative wood products and processes could add significant value to small-diameter, fire-prone timber and thereby offset the costs associated with reducing forest fuel loadings. The product selected for study was LamHeader, developed and patented by Wyoming Sawmill, Inc. (Sheridan, Wyoming). LamHeader is a laminated wood product that can be made from various grades of sawn material and designed to meet a variety of engineering requirements (Wyoming Sawmill, Inc. 2002). LamHeader is made by laminating stud-grade material into a beam, resawing the laminated beam to produce two web sections, and then bonding a flange top and bottom of 2 by 4 lumber to produce a laminated I-beam (Fig. 2).

The advantages of the process used to make LamHeader include the following:

- Engineered beam properties are based on performance requirements.
- Material is used more efficiently.

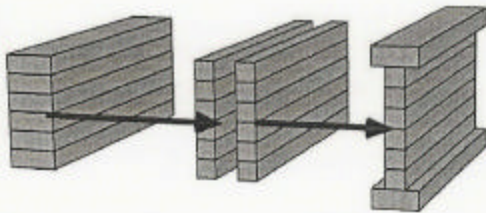


Figure 2—Simplified process for fabricating LamHeader. Stud material is laminated, resawn, and then bonded with top and bottom 2 by 4 flanges.

- Defects are distributed, making a more uniform wane-free product.
- Some curved, warped, and twisted material can be straightened in the laminating process.
- The laminating process produces a straighter, more dimensionally consistent material.
- Low-value economy grade lumber is upgraded to a value-added engineered product.

LamHeader has been made commercially using relatively straight-grained, moderate- to high-quality timber. Our question was, Could we adapt this technology to convert low-value small-diameter curved and cull timber into a product with value similar to that of LamHeader?

Processing straight, mature, "stud-grade" timber into LamHeader with current technology is not difficult. The challenge is to determine whether small-diameter curved and cull material can be processed and if it has sufficient strength properties to be marketable.

Several technologies are combined to produce a modified LamHeader. First, special sawing equipment is used to "follow" the irregular shape of the small-diameter logs. Second, curved boards are straightened in a microwave drying process. The boards are stress-graded and segregated into low and high modulus of elasticity (*E*) groups. The low-*E*-rated boards are bonded and vertically resawn to produce webs. The high-*E*-rated flanges are laminated with the laminated webs to form a laminated structural I-beam, known as Lam-I-Joists. The advantage of this process is that the lower value web material is sandwiched between higher *E*-rated flanges to engineer a stronger and higher-value laminated structural I-beam.

Problems With Curved Trees

In the past decade, several machinery manufacturers have been developing sawing equipment specifically designed for small-diameter curved trees. Current equipment can handle from 2% to 3% curvature. Following the curvature of the tree significantly increases strength by following the grain; conversely, cutting across the grain, as is done with conventional sawing equipment, reduces strength. Drying defects are also reduced by following the grain angle of the timber. If a sawmill is considering small-diameter utilization and improved yield, curve-sawing equipment should be considered. Highly curved material (above 3%) is presently beyond the current capability of commercial equipment. However, the technology is advancing quickly. As this technology improves, further studies will be needed to determine processing issues and performance properties.

As the curvature of the tree increases so do handling problems associated with the bowed pieces as they proceed through a sawmill. Two technical challenges arise as

curvature increases. The first is cutting curved material with large single or double curvatures. The second is processing the material once it has been cut. Curved material does not lend itself to easy handling through a sawmill. Straightening all or part of the material would facilitate handling and utilization.

Another part of our research program is to determine the potential for straightening curved pieces. We decided to investigate this problem by using a microwave process that could straighten and dry the material simultaneously.

Objectives

General Research Program

The overall goal of our research is to maintain healthy and sustainable forests through developing an economically viable process or processes and products that can utilize small-diameter timber from logging and thinning operations. In this way, "whole site" forest management can be implemented to better utilize the fiber resource while minimizing the risk of insect attack, disease, and fire. Providing economical options for using small-diameter material also encourages rural development. This 3-year research project is currently in its second year and is funded under the USDA Forest Service National Fire Plan (Hunt 2000, Hunt and Winandy 2002).

Project Objectives

The goal of our project is to develop uses for low- or no-value curved and cull small-diameter trees. We are interested in gaining a better understanding of

- optimized processing methods for small-diameter curved and cull material,
- basic properties of small-diameter curved and cull material,

- properties of value-added products from this material (predicted compared with actual), and
- overall economics for utilizing small-diameter material.

Experimental

Material Selection and Processing

In cooperation with the Bighorn National Forest and Wyoming State Forest, 726 curved and cull small-diameter trees were cut for this study (Fig. 3). The material was selected because of significant curvature or cull features that rendered the tree essentially valueless for standard grading and sawing practices. Tree diameters ranged from 10 to 23 cm (4 to 9 in.) diameter at breast height.

The trees were bucked into more than 2,000 2.4-m (8-ft) sections and taken to Wyoming Sawmill, Inc. The trees were cut with conventional saw processing equipment into standard 38- by 89-mm (nominal 2- by 4-in.) lumber (hereafter referred to as 2 by 4). Although the equipment was designed to handle trees ≥ 30 cm (≥ 12 in.) in diameter, we were able to process the small-diameter material by paying special attention to handling issues along the line.

All sections were initially rough-cut through a standard quad band-mill to form two flat faces on opposite sides to 96-mm (3.77-in.-) thick flitches. Flitches that would yield one or more nominal 2 by 4 studs were processed. A small amount of wane was allowed. Sections with large single sweep or small multiple curves were first rough-cut into flitches by orienting the curve "horns up" (Fig. 4). Sections with more than 2% curvature were removed and stacked separately. A total of 251 single- and multiple-curved flitches with greater than 2% curvature were separated from the straighter flitches for special processing. Because the sawing process was not



Figure 3—Small-diameter curved and cull trees for study: (a) previously thinned stand from which study trees were removed; (b) small diameter material removed for study.



Figure 4—Example of “horns up” cut made by conventional bandsaw on small-diameter tree with 6% curvature.

optimized for small-diameter trees, a few trees were unusable. Flitches with little or no curvature were cut into 2 by 4 lumber, stacked, and conventionally dried to equilibrium moisture content below 19%.

After drying, the lumber was processed through a planer. The finished 2 by 4 lumber was shipped to the University of Wyoming for nondestructive stress grading. Transverse vibration was used to determine dynamic modulus of elasticity (DMOE).

Beam Fabrication

Given the wide range of possible properties for small-diameter trees, it is important to presort materials according to strength properties. After nondestructive testing, the 2 by 4 studs were sorted and grouped according to DMOE values as follows: 25% low, 50% medium, and 25% high values.

Within each group, six studs were arranged with defects (wane) randomly oriented toward the inside of the beam (Fig. 5). In addition, it was critical that a full flat surface of the top and bottom members was faced away from the core to achieve a maximum gluing surface for bonding the web sections to the flanges. Phenol-resorcinol adhesive was used to bond the 2 by 4s together. The finished laminated member was 8.9 cm (3.5 in.) by 22.6 cm (9 in.) by standard 2.4 m (nominal 8 ft) long. Once bonded, the beams were resawn and replaned lengthwise to produce two web sections 4.5 cm (1.5 in.) by 22.6 cm (9 in.) by 2.4 m (nominal 8 ft) long (see Fig. 2).

Visually graded Select Structural 2 by 4s from the three DMOE-rated groups were selected for fabrication into flange sections. These boards were finger-jointed end-to-end to produce 7.3-m- (24-ft-) long flanges. For half the web sections from each DMOE group, the flanges were bonded to form laminated I-beams; the other half remained as web sections for comparison testing. To date, both nondestructive and destructive tests have been performed on the web sections and I-beams at the University of Wyoming–Laramie. The results are being analyzed.

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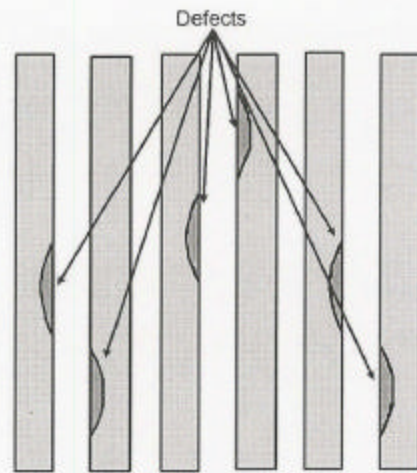


Figure 5—Defects of each group of six low- or no-value 2 by 4s were randomly distributed. Lumber was resawn into web sections to fabricate a value-added laminated I-beam. (Courtesy of Chris Wallace, Structural Research Engineer, Wyoming Sawmill, Inc.)

Straightening of Curvature by Microwave Drying

Some board warping and curvature can be tolerated in processing. Excess curvature, however, may require significant additional handling, which makes the utilization of this material too costly. Approximately 100 single-curved flitches were shipped to the Forest Products Laboratory. Curved 2 by 4s were cut from these flitches. Tests will be conducted to evaluate whether curved boards can be straightened during the microwave press-drying process (Fig. 6).

Discussion

Initial manufacturing included the lamination of multiple small-diameter 2 by 4s into nominal 2 by 9 (standard by 38- by 216-mm) engineered lumber. Because most small-diameter material contains a great amount of strength-reducing wane, these pieces were remanufactured at Wyoming Sawmill, Inc., into a “new” engineered wood product called LamLumber. The patented LamLumber process makes it possible to utilize small-diameter material by remanufacturing it into an engineered wood product with randomly located defects. The manufacturing process places the wane face on the interior of the LamLumber, where it is no longer considered as wane. The defects can then be offset with other defects (Fig. 5), which results in a viable structural product by reducing the number of defects in the product cross-section.

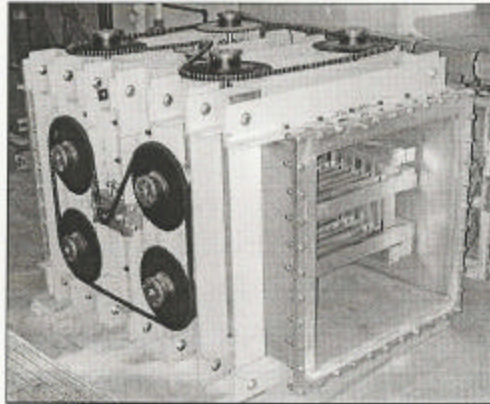


Figure 6—View of microwave drying chamber showing pressing bars that will be used to straighten and hold the curved 2 by 4s during drying.

A total of 76 7.3-m (29-ft) laminated 3.8- by 22.9-cm (1.5- by 9-inch) beams were fabricated at Wyoming Sawmill, Inc. Half of these beams were laminated with 3.8- by 8.9-cm (1.5- by 3.5-inch) flanges. All the material was taken to the University of Wyoming–Laramie for bend and shear tests. The University of Wyoming has completed mechanical evaluations and is currently analyzing that data.

Preliminary results from Master's thesis work by Rebecca Faverty and Ryan Rayda of the University of Wyoming–Laramie¹ have shown that beams made from small-diameter trees have sufficient strength properties to be competitive with commercial laminated products. Good correlations were obtained for the nondestructively measured board properties and their predicted laminated product properties with actual laminated beam properties. Individual reports summarizing this work are in preparation.

Using 2 by 4s to manufacture I-beams has several advantages. First, defects in the material—whether the result of curvature, knots, grain angle, or wane—are redistributed more evenly through the web section, thus reducing stress concentration effects and upgrading load-carrying capability. Second, if curvature is the major defect in an individual 2 by 4 board, laminating will help straighten the board. Third, compared to an oriented strandboard (OSB) webbed I-beam, a web section made from solid wood as can carry substantially higher compressive loads without buckling.

¹Faverty, R.N. Feasibility of using small diameter lumber in glued laminated applications. Rayda, R.R. Non-destructive evaluation of lumber from cull and suppressed growth trees. Master's theses. University of Wyoming–Laramie.

This is especially critical for beams used as load-carrying headers. Thus, a low- or no-value material can be engineered to produce a structurally strong and value-added product from virtually valueless small-diameter, fire-prone timber.

If a products made from small-diameter material are used primarily for a bending application, maximum properties would be obtained if the 2 by 4s were arranged with higher modulus of elasticity material placed on the outside. Selective placement of small-diameter 2 by 4s leads to a range of performance options.

Ongoing Research

The goal of the second phase of our research, presently being conducted at the Forest Products Laboratory, is to determine alternative methods to reduce curvature from the cut boards through the use of microwaves and clamping during drying. We are developing a larger and more powerful prototype microwave press-drier with integrated controlled restraint and heating that will be used to straighten the curved sawn lumber during the drying process. Our partner in this work is Genesis Laboratories.

In the third phase of the research, the Forest Products Laboratory Economics work unit has been conducting an economic and technology assessment of the process (report in preparation).

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Appendix D – Roofing From Recycled Plastic & Wood Fiber



Research in Progress

INFOLINES

ATTRACTIVE, DURABLE ROOFING MADE FROM RECYCLED PLASTIC AND WOOD FIBER

Research and development by the Forest Products Laboratory (FPL) and Teel-Global Resource Technologies (Baraboo, Wisconsin) have resulted in the creation of a molded composite roofing system made entirely from recycled natural fiber and recycled plastic. A panelized roofing system is an ideal use for this recycled composite technology because (1) panels can be easily molded to resemble traditional roofing materials, such as cedar shakes, Spanish tiles, or slate and (2) the aesthetic quality of the panels provides an opportunity to showcase recycled material in a product that looks expensive but costs much less than the traditional product it replaces.

Studies of this composite roofing system have shown several advantages compared with existing manufactured roofing systems:

- **Low cost**—Using recycled materials and a shorter molding time, these composite roof panels can be manufactured at a cost substantially less than that of clay, slate, or fiberglass roof tiles.
- **Zero manufacturing waste and fully recyclable**—Scrap from manufacture or from tiles that are trimmed during installation can be directly remolded into new roof tiles.
- **Enhanced dimensional stability**—Expansion and contraction due to temperature changes are significantly less than that of pure plastic roof tiles.



The shingles on FPL's research demonstration house are made from recycled plastic and wood fiber and are expected to last several decades.

- **Ease of use**—Conventional woodworking tools can be used to trim the tiles during installation, and there is virtually no breakage.
- **Labor savings**—The composite roofing system is easy to install, and the panelized nature of the design speeds the process two-fold. Highly trained installers are not needed.
- **Lighter weight**—Composite panels are lighter in weight than clay or concrete tiles, resulting in reduced transportation costs and structural requirements for roof framing.

Homeowners want building products that are low maintenance but provide high performance. At the same time, builders are looking for lower cost, labor-saving materials. The development of composite products from natural fiber and recycled plastic could help meet some of these demands.

However, there is a lack of data on the durability and performance of the composites, and builders are reluctant to use untested products.

OBJECTIVES

The objective of this project was to further develop and refine the technology of creating a molded composite roofing system from natural fiber and recycled plastic. This research and development project measured the durability, installation advantages, time savings, and builder's acceptance of a new class of building product.

APPROACH

Researchers conducted tests to improve the formulation of recycled plastics and fiber, including alternative natural fibers such as kenaf and jute. The geometrical design was refined to ensure that the product is builder friendly. Researchers also determined the most effective layout of the panels for easy cutting during installation.

Environmental chambers were used to expose the panels to intense ultraviolet (UV) light to evaluate their long-term durability. Researchers also conducted strength tests and fire tests of the composite material.

The complete composite roofing system has been installed and monitored on four structures. The

information collected will be used to compare this composite system and conventional materials on the bases of labor and material costs, ease of construction, and waste generated.

EXPECTED OUTCOMES

The results of this research project have verified the durability, installation, engineering, and performance of a low-cost, high-performance composite roofing system manufactured from recycled materials. Continued collection of field data will demonstrate the durability of this system in various environments and evaluate the overall acceptance of the product. Acceptance of composite building materials has the potential to open up large markets for recycled plastic and natural fiber materials.

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