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During the nation’s westward expansion of the 1800’s, settlers were attracted to areas where available natural resources such as forests, minerals, soil, water, and climate conducive to agricultural production allowed them to earn an economic livelihood.

Areas with the greatest concentration of relevant resources were in greatest demand as these areas could support the largest populations and life could be lived more abundantly. As resource-based industries such as logging, mining, and agriculture were the most significant economic enterprises, it logically followed that the job creation and community development efforts of that era focused on locating and developing resources, and building a transportation infrastructure to more efficiently get these resources to market.

The middle decades of the 20th century saw a major transformation in the U.S. economic structure. Technological advancements in equipment were the major impetus for this transformation, and improved agricultural...
technology meant that each producer could operate a much larger farm. As a consequence, the size of the average farm increased greatly with a corresponding decline in the number of farms. Similarly, technological advancements in the other natural resource industries were also causing reduced employment, and with labor needs in these industries reduced, millions of rural people migrated to the city to seek employment in the booming manufacturing sector. In time, manufacturers began moving to rural areas where they could employ displaced farm and resource workers while avoiding unionization and keeping labor costs low. This increased availability of manufacturing jobs in rural areas slowed the pace of rural-to-urban migration, and eventually manufacturing employment far exceeded both agricultural and resource employment, even in rural areas.

During this era, the most common approach to job creation and community development was the attempt to induce an industrial firm to build or relocate in the community. Known as the “buffalo hunt,” this approach to community development made sense at the time as manufacturing was the growth industry and success meant that a community could attain a significant number of stable, middle-income jobs that often matched the skill-set of the local labor force.

In the beginning of the 21st century we are now in the midst of a second major transformation in the nation’s economic structure. In this transformation, agricultural and natural resource employment continue to decline and is compounded by the number and proportion of manufacturing jobs in the U.S. that began an initial decline in the late 1970’s and has since increased in scope and magnitude. Some manufacturing jobs were lost because of technological advancements where machines replaced human labor in the production process. The improved technology meant factories could produce more than before with a much smaller work force. Also adding to the reduction in U.S. job opportunities was the reduced labor costs in other countries as multinational corporations chose, and continue to choose, to take advantage of the workforce available in these lower wage-earning nations.

Nationally, job losses in natural resource industries and manufacturing have been more than offset by significant increases in service sector employment. This transformation in economic structure is important because natural resource jobs are fundamentally different from industrial jobs, which in turn are fundamentally different from service jobs. Different industries have different wage structures and different work schedules; they require different levels and types of education, training, and skills; they differ in the types of relationships that exist between owners and workers; and they vary in the proportion of the workforce that is either male or female.

These and other factors are likely to have major implications for numerous aspects of life including individuals, families, community institutions, and political outlooks. The relationship between natural resources, and job creation and community development is also fundamentally different as a result of this transformation. Simply put, the value of resources for traditional extractive uses like logging and mining has declined while the value of resources for amenity purposes has increased.

Today we are faced with very different economic circumstances than in the past and it is critical that in response to these new circumstances we change our approaches to job creation and community development. Communities that go forward in a “business as usual” manner are likely to suffer as traditional approaches to community development are no longer effective. With the decline of the traditional mainstays of the rural economy, rural communities need to establish new ways for people to obtain high quality employment: they need to become daring in their community development efforts.

In this issue of Rural Connections, researchers and Extension professionals describe innovative and successful approaches to job creation and community development that are more applicable in today’s economy. It is our hope that community leaders, Extension professionals, and others will carefully examine these articles and utilize suitable ideas in their communities.

I
The service sector provides intangibles rather than the physical products that result from agriculture, the natural resource industries, and manufacturing. Generally, services are intended to make one’s life more comfortable or fulfilling and include entertainment, education, and health care.
THE NEW NATURAL RESOURCE ECONOMY

BY SUSAN LURIE AND MICHAEL HIBBARD

Introduction
We are in the midst of a significant change in the way Western rural landscapes and natural resources are conceptualized and used. For 150 years or more, traditional forms of natural resource use were the economic mainstay of the rural American West. While the primary sector—agriculture, logging, fishing, mining, and so on—continues to play an important role, over the past twenty-five years uncertainty has arisen about its ability to provide a viable economic base for small towns and rural areas. As a result, many rural Western communities are seeking new economic bases. One important development is the emergence of the New Natural Resource Economy.

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Michael Hibbard is the director of the Institute for Policy Research & Innovation at the University of Oregon.
Changing Societal Values and Needs, Changing Rural Economic Opportunities

The U.S. population was 35.8 percent rural in 1950; by 2010, it was 17.7 percent rural (UN, 2007). Rural areas constitute an even smaller fraction of the economy than of the population: In 2010, non-metropolitan regions accounted for 14 percent of total U.S. jobs and production, and 10 percent of total wage income (IHS, 2011). What happened? “Rural restructuring,” changes in the organization and composition of the rural economy.

Over the twentieth century, industrialization of the primary sector transformed the rural economy (Cochrane, 2003; Hirt, 1994). Initially, rural communities provided primary producers with supplies, equipment, business services, transportation, and the like. However, commodity production—the substitution of capital for labor, product specialization, increased scale of operation, and consolidation of ownership—enabled vast increases in output with decreased local inputs. Commodity production takes fewer farmers, loggers, miners, and ranchers to produce more wheat, timber, minerals, and beef.

As well, there have been momentous improvements in transportation and communication. The result is a disconnect between primary producers and the local communities on which they formerly depended.

Not all Western rural areas are in decline, of course. Many amenity-rich communities are thriving as centers for long distance commuting, tourism, recreation, and retirement, and are experiencing unprecedented growth (Nelson, 2001). However, they are not the norm. Using 2000 Census data, Kilkenny (2010) found that the median household income in rural U.S. counties is less than two-thirds that of urban households and that the median value of a rural home is less than half that of an urban home.

The loss of economic base because of the rise in commodity production has also led to a decline in community resilience. Numerous studies over the last sixty years have found that agricultural communities in which family farming is the economic base have more varied social and civic organizations, higher levels of participation in community decision making, and better socio-economic health than those with an economic base in corporate agriculture (Goldschmidt, 1946; Lobao, 1991; Tolbert et al., 1998).

A strong, locally based economy is associated with strong community resilience, the ability to absorb disturbance while undergoing change, so as to retain or enhance effective function, structure, and identity (Magis, 2010). As rural economies continue to restructure, community resilience becomes an increasingly critical factor.

The effects of rural restructuring have been magnified by a clash of social values. Until the late twentieth century primary producers were

“Numerous studies over the last sixty years have found that agricultural communities in which family farming is the economic base have more varied social and civic organizations, higher levels of participation in community decision making, and better socio-economic health than those with an economic base in corporate agriculture.”
encouraged to maximize production, in order to supply raw material for industry and affordable goods for consumers. Recently, however, competing expectations have arisen. Primary producers are being asked to prioritize activities that, while they may be critically important for society as a whole, provide no immediate product or return on investment—stewarding rural lands and resources for future generations and protecting a variety of non-market values and cultural amenities.

Having spent generations concentrating on commodity production, rural people are not only impoverished by this “post-productivist” turn, they also feel useless, criticized, and marginalized (Markey et al., 2008). The result is a conflict between those who want to maintain traditional resource uses and those who believe environmental restoration and protection must take priority over all other considerations.

**What to Do? NNRE**

“Nature”—forests, water, soil, minerals, recreational opportunities, and so on—continues to be the fundamental economic asset of most Western rural communities. Their future depends on how that asset is conceptualized and used. Commodity production conceptualizes nature as an input, for use in the production of goods and services for the global marketplace. An emerging alternative—multifunctionality—conceptualizes rural landscapes as having three functions (Holmes, 2006)—production of basic commodities for the market; consumption, by providing amenity values that people utilize for recreation and the like; and protection, by providing “ecosystem services” such as air and water purification, biodiversity, and flood and erosion control.

Multifunctionality conceptualizes rural landscapes and their resources as assets to be nurtured for the long term, and healthy ecosystems and healthy rural economies as mutually reinforcing. In this view, ecologically sensitive management of rural landscapes can produce benefits in the market for rural landowners, thereby strengthening rural communities socially and economically (Maida, 2007).

NNRE, the New Natural Resource Economy, is the practical outcome of multifunctionality. Governments spend substantial funds in support of protection—restoring and maintaining intact and functioning ecosystems, healthy fish and wildlife populations, clean water, and the like. This has stimulated an emerging “green collar” economy: restoration requires firms, workers, material, and supplies; wildfire mitigation produces biomass with potentially commercial uses; and projects have to be planned, managed, and monitored.

Hibbard et al. (2006) found that every dollar in administrative support received by Oregon’s local watershed councils brought an additional $5.09 to the local economy. The study also reported that a typical watershed council is responsible for $268,072 in local economic ac-
“For healthy ecosystems and healthy rural economies to truly be mutually reinforcing, producers have to find markets for goods and services produced from a multifunctional landscape, as well as direct consumption of the landscape.”

Nevertheless, Nielsen-Pincus et al. (2010) found that each $1 million invested in forest or watershed restoration generates between 15.7 and 23.8 jobs, and between $2.1 and $2.4 million dollars for the local economy. And a study of fuels reduction programs on southwestern national forests (Hjerpe et al., 2008) found that the programs generated five hundred jobs in 2005.

These protection activities are evidence of the emergence of an NNRE. However, they depend on public expenditures. For healthy ecosystems and healthy rural economies to truly be mutually reinforcing, producers have to find markets for goods and services produced from a multifunctional landscape, as well as direct consumption of the landscape.

Despite the need for a new economic base and the apparent potential of NNRE, there has been little empirical study of these new uses of the rural landscape. To begin to fill that void we conducted a scoping survey of NNRE activities across rural Oregon. We asked respondents in every county to tell us about new ways local people have found to gain income from local natural resources.

The results summary (Table 1) provide a preliminary snapshot of the range of NNRE businesses in one state. Many respondents mentioned “green collar” activities of the sort discussed above. More important, they reported a wide range of production and consumption activity.

**Conclusion**

Not all of these business types are new, though many are. What is new is thinking strategically about NNRE as an emerging economic sector in its own right. Viewed strategically, NNRE presents significant possibilities to diversify rural economies and increase local resilience. To help rural communities make the most of NNRE’s potential, it is important to understand the range of businesses it comprises as well as policy and program needs in support of NNRE.

Current approaches to rural economic development aim to move the community away from resource utilization through recruitment of new industries such as light manufacturing and call centers or new populations such as retirees. Our survey results suggest that rather than moving away from natural resource utilization, rural communities are finding new ways of thinking about and utilizing resources.

At base, NNRE entails locally owned small and medium-sized enterprises that utilize local resources to produce goods and services for sale outside the community; for sale locally, replacing imports; and/or for personal consumption. Rather than recruiting new firms or residents, rural communities would benefit more from policies and programs that promote opportunities and loosen constraints affecting rural business startups—tools to facilitate and support rural community NNRE entrepreneurialism.
### Table 1. NNRE Enterprises Identified by Survey Conducted in Oregon.

<table>
<thead>
<tr>
<th>PRODUCTION</th>
<th>FOREST PRODUCTS</th>
<th>ALTERNATIVE ENERGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farming/ranching</td>
<td>Forest products</td>
<td>Alternative energy</td>
</tr>
<tr>
<td>• Native plant nurseries, raising plants for habitat restoration</td>
<td>• Community-owned multiple use forest</td>
<td>• Utilization of plantation-grown hybrid poplar trees for electricity generation</td>
</tr>
<tr>
<td>• Sustainably produced food products— Including meat, milk, cheese, eggs, fruits and vegetables – sold locally and in metropolitan areas, for household, restaurant, and institutional (schools, hospitals, etc.) use</td>
<td>• Post and pole manufacturers utilizing “waste” from thinning and wildfire mitigation activities (e.g., small diameter logs and weed species such as juniper)</td>
<td>• Geothermal heat – for state prison, hospitals, and schools, as well as industrial, business, and residential users</td>
</tr>
<tr>
<td>• Wine grapes and wine production</td>
<td>• Utilization of slash–biomass–both as hog fuel and by processing it into pellet fuel, to generate heat and electricity for schools, hospitals, and homes</td>
<td>• Numerous biomass plants under construction</td>
</tr>
<tr>
<td>• Herbs and seeds sold by catalog and online</td>
<td></td>
<td>• Numerous wind farms</td>
</tr>
<tr>
<td>• Suppliers to producers of emerging products (e.g., grape growers and wineries)</td>
<td></td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>CONSUMPTION</th>
<th>HARVESTING FIREWOOD, MUSHROOMS, BERRIES, AND OTHER PLANT LIFE FROM THE FOREST FOR PERSONAL USE</th>
<th>AGRITOURISM–FARM AND RANCH STAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecotourism</td>
<td>Harvesting firewood, mushrooms, berries, and other plant life from the forest for personal use</td>
<td>Agritourism–farm and ranch stays</td>
</tr>
<tr>
<td>• River/paddle trails, including maps, haul-outs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Kayak Companies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mountain bike guides, hunting guides, fishing guides, hiking guides, birding guides, and horseback guides</td>
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**References**


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**RECOMMENDED READING**


Many of America’s farmers and ranchers have been struggling economically to continue to make their operations viable due to variable prices for agricultural products, fickle markets, changing environmental conditions, and global competition. For agricultural operators experiencing these challenging times, employing an entrepreneurial approach to diversify operations beyond agricultural production, especially related to the development of farm or ranch resources for agricultural tourism or agritourism, can be beneficial. There has been a growing interest among tourists in experiencing the activities of the farm or ranch for agritourism (Burr, 2009), and this is growing nationwide as ag-operators in many states offer a variety of activities and experiences to a visiting public as a way to diversify operations and increase profits (Brown, et al., 2007).

Agricultural entrepreneurs are diversifying their enterprises, and adding value and income by producing for specialty or niche markets, and providing services or experiences for a visiting public. Such strategies are giving some producers a competitive advantage in today’s marketplace. Value can be added to various agriculture products produced and sold to increase profit potential through specialized production, packaging, and marketing, such as producing and marketing specialty items—jams, salsas, cheese, honey, cider, wines. Value-added is also providing various services or experiences with a particular product or mode of production, such as direct sales involving “Pick Your Own,” farmers markets and roadside stands, and agricultural festivals and special events. Value can also be added by providing various activities and experiences of interest to visitors. Ag-operators can develop agricultural, natural, and heritage resources for outdoor recreation, tourism, and educational opportunities.

“Agritourism includes any income-generating activity conducted on a working farm or ranch for the enjoyment and education of visitors. It includes the interpretation of the natural, cultural, historical, and environmental assets of the land and people working on it” (George et al., 2008). Many ag-operators have amenity resources people value, and can offer opportunities for a diversity of tourism, recreation, and learning experiences. For the visitor, agritourism can be active involvement in a variety of activities and experiences, through actual overnight accommodations on a farm or ranch, such as a dude or guest ranch or bed and breakfast, through heritage and cultural programs, hunting and fishing activities, horseback riding or horse packing, or other guided trips. Agritourism merges the world of travel with experiences of farming, ranching, and our agricultural system, and lets the traveling public interact directly with farm or ranch families and workers, and experience a variety of agriculturally related activities and experiences.

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Outdoor recreation remains among the top purposes for leisure travel in the U.S., and simple healthy, outdoor activities such as hiking, biking, camping, or wildlife viewing generate enormous economic power and fuel a far-reaching “ripple effect” that touches many of the nation’s economic sectors.

Nature tourists spend time and money to experience nature and the outdoors and to learn more about a particular destination with a concern for minimum impact and sustainability. Agritourism operators can cultivate the outdoor recreation and nature tourism market’s potential by offering opportunities for a variety of activities and experiences, by restoring wildlife habitat and protecting riparian areas and wetlands, and by creating favorable conditions for songbirds and other wildlife. Activities for nature tourists may include: bird and wildlife observation; festivals and special events; interpretive signs, stations, waysides, and trails for wildlife viewing; and other educational programs.

Cultural heritage tourists are attracted to areas rich in significant cultural and heritage resources worthy of protection. These tourists spend time and money to experience and enjoy local culture and heritage, and learn more about a particular destination. Agritourism operators can cultivate the cultural heritage tourism market’s potential by offering opportunities for a variety of cultural and heritage activities and experiences, by preserving cultural and heritage resources, and by telling the story—revealing the meaning and relationships of cultural heritage through first-hand involvement with objects and artifacts, heritage sites, and landscapes. Cultural heritage tourism activities may include: festivals and special events; guided interpretive tours that share traditions and history; living history presentations; museums; arts and crafts; music, song, and dance; ethnic foods; historic buildings and architecture; driving tours; and many other activities.

For every agritourism success story, there is at least one counter-story of a farmer or rancher who got out of agritourism because it was not profitable or was too challenging (Burr et al., 2010). The development of agritourism is not without challenges, as issues related to zoning, permitting, environmental health and food regulations, visitor safety, and liability and insurance often act as constraints to the successful development of tourism resources for an ag-operator. Farmers and ranchers often become “frustrated and overwhelmed with their county’s policies and procedures, and the expenses related to initiating or expanding an agritourism enterprise on their farm or ranch” (Rilla et al., 2011, p. 61). Additional challenges relate to the development of a sound business plan incorporating agritourism activities, effective marketing and management, and taking a community and regional development approach. Although agritourism has great potential for farmers and ranchers seeking to generate additional revenue, capitalize on underused assets, and educate the public, it is not a “magic bullet” and not all agritourism ventures have succeeded.

In agritourism, the farm or ranch is often the “face of farming and ranching” in the community, region, or state, and it is often advantageous to understand what aspects of agriculture other local agricultural, tourism, and marketing organizations emphasize in a region so that the ag-operator can develop a “niche” in coordination with other farms, ranches, and attractions nearby.

Customer service should be an integral part of agritourism business planning, and involves training staff to interact with customers in an appropriate way that will ensure a safe and high quality experience for customers. Quality customer service assures customers will return and tell other potential customers about the agritourism business, great word-of-mouth marketing. The farm or ranch needs to have sufficient capacity (staff and infrastructure) to provide basic services such as parking, transportation, signage, and customer assistance, and in order to maintain a safe and customer-friendly business, the provision of services and facilities such as restrooms. The property and facilities need to be maintained and be in compliance with zoning, health, and environmental regulations, and it becomes useful as well to develop a risk management plan.

To create good community relations, it is important to regularly provide opportunities for organized groups and individuals in the local community to visit the property and experience the agritourism product, activities, and experiences offered. This activity can also assist with marketing efforts. Regular review of a business plan and appropriately adding value (price) to all farm or ranch services, products,
and experiences will provide for the long-term sustainability of the agritourism business.

Some critical elements for agritourism operators are a sincere interest in visitors and a willingness to spend time with them, an outgoing personality with lots of patience and perseverance, sufficient land and water resources in an attractive setting, and supporting services and infrastructure. Additionally, agritourism operators need capital finances for start-up and conversion costs, good organizational skills, an accessible location to nearby populations and markets, and strong spousal and family support and involvement. Other considerations include liability and risk management, adoption of county and state health and safety codes and regulations, developing a sound business plan, starting small and then building the agritourism business over time, and marketing assistance by collaborating with local, regional, and state destination marketing organizations.

As an opportunity for expanding business and economic impact in a community, it may also be possible for agritourism operators to band together with other businesses to develop and market overnight get-away packages. It is even possible for a group of communities to work together to market agritourism products, activities, and experiences in their area or region.

In working with community stakeholders interested in agritourism development, one useful approach is an active collaborative learning process focusing on three interrelated arenas: community engagement, resource identification and management, and small business development/entrepreneurship.

Community engagement involves stakeholder identification of values related to the rural way of life, which in turn leads to determining a common community vision, and the role agritourism development plays in achieving that vision. Resource identification and management is initiated by a stakeholder inventory and assessment of resources, such as particular features, sites, events, and locations that currently exist or have the potential as tourist attractions and destinations. Once identified, management involves resource protection and stewardship, development and marketing, and visitor management. New opportunities for small business entrepreneurs associated with tourism products and services can be identified and marketed.

These three arenas provide an organizing framework for sustainable community tourism development, a part of which is agritourism development. Leadership, partnerships, and collaborative planning are key organizing principles that assure long-term success in tourism development, as is wise stewardship of resources, all of which contribute to enhancing the sustainability of rural community life.

Although agritourism development may not be an economic panacea for all ag-operators, it can be a vital strategy for diversifying and boosting profits, especially for smaller farms and ranches. Such efforts not only contribute to enabling ag-operators to diversify operations beyond agricultural production into agritourism, but also contribute to overall rural community development.

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“Agritourism operators can cultivate the outdoor recreation and nature tourism market’s potential by offering opportunities for a variety of activities and experiences, by restoring wildlife habitat and protecting riparian areas and wetlands, and by creating favorable conditions for songbirds and other wildlife.”

RECOMMENDED READING

Recommended Reading
Towards a Micronesian Product Seal

BY PETER R. BARCINAS

Job creation efforts in Micronesia are focusing on sustainable tourism and the production of local products as these present the most promise to offset the myriad of challenges eroding local traditions.

The initiative “Towards A Micronesian Product Seal” may provide the link to close the perceived gaps amid competing or fragmented development initiatives. Given the growing interest to evaluate the region’s development issues, this initiative helps to guide the discussion with the hope that lessons learned translate into the needed regional transformation.

The Micronesian Product Seal hopes to spark interest in revitalizing support for a true sustainable regional handicrafts strategy. This latest initiative is based on the region’s long history of promoting economic development based on its cultural, agricultural, and local products. For example, the Guam Micronesian Island Fair hosted its 23rd successful event representing perhaps the longest-running unifying event for everything Guam and Micronesia. This event continues to evolve and remains true to its mission of displaying and promoting the common interests of the region’s indigenous entrepreneurs, manufacturers, traditional artists, and cultural performers.

“Magnificent Micronesia” is the region’s unified tourism initiative intent on delivering a well-organized promotional campaign set to a diverse backdrop of languages, culture, and island settings. The Micronesian Product Seal and unified branding provide a similar practical, value-added strategy while focused on preserving the uniqueness of the different cultures, governments, and the areas natural assets.

While the natural assets and serene tranquil settings abound, the problems of depopulation and unemployment continue to challenge any effort to deliver a sustainable approach for the region. Tourism continues to provide a measure of relief and hope for reversing these trends and ushering in the much-
needed regional economic transformation.

The region’s initiatives outlined by the Micronesian Chiefs Executive Summit (MCES) include positioning education, workforce development, and economic development as integral strategies working together to deliver the wanted outcomes in education, economic development, and employment also known as the power of e3. This e3 portfolio is part of the broader regional initiatives sponsored by the MCES to include sustainable energy, environmental protection, telecommunication, tourism, and healthcare.

The Regional Workforce Development Council (RWDC), working through the MCES working committees, introduced the idea of a regional value-added initiative product seal. The Made in Micronesia Seal preserves the individual identity of each of the islands while collectively promoting the region as a visitor destination.

Through the RWDC’s workforce strategic plan, “Micronesia Works,” the focus on entrepreneurial opportunities or self-employment workforce strategies seeks to align and update this entrepreneurial initiative leveraging the idea embedded through the country of origin strategy. This can serve as the “Keep it Local” effort intended to promote a sustainable made-in-region initiative.

In the past, Guam and the Commonwealth of the Northern Marianas (CNMI) took part in export trade programs capitalizing on the terms of trade laws providing tariff advantages for eligible products intended for the United States. Investment incentives attracted foreign investors to establish a local presence in areas that provided tariff-free or quota-based advantages. Investments were made in garment and watch assembly and both Guam and CNMI benefited from the jobs created until these thriving industries closed mostly due to increased pressure to revisit tariff rules and protectionist rules.

Like Guam and CNMI, each of the different island entities--Republic of Palau, Federated States of Micronesia (Chuuk, Yap, Kosrae, Ponape), and Republic of the Marshalls--have all explored their assets for investment and all have been based on extractive strategies. Fisheries and ocean-related enterprise remains a flagship for the islands each playing a significant role in the regional economy.

According to the Office of Insular Affairs, U.S. Department of Interior, the region’s population is estimated at over 400,000. Imagine the range of issues associated with the increasing demand for imported goods underscored by the challenges for products made under the right protectionist structure for jurisdictional branding strategies. The interest to promote a unified regional branding continues to change from the efforts of the Pacific Travel Association promoting Micronesia as a regional destination.

The Micronesian Product Seal offers a unique advantage for area entrepreneurs to exploit the many opportunities to promote the “Keep it Local” initiative. Made in Guam and Grown in Guam initiatives offer unique opportunities to deliver a portion of an import-substitution strategy through this effort whereby enabling the region to promote their version of “keeping it local” and keeping dollars circulating in Micronesia. While the structures for micro businesses exist, such as the Pacific Business Development Center, other collaborators are needed to deliver a regional sustainability brand that keeps dollars circulating locally while preserving the MCES goals.

The opportunities to profit through sustainable tourism development provide Micronesia many yet-to-be-discovered returns on investments for keeping economic activities local. These efforts work toward preserving traditional ways of life while capitalizing on the opportunities of being at the fringe of a globalized market area. Combined with the Micronesian Product Seal initiative these serve the sustainable and evolving tourism agenda in the region.

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Recommended Reading

Magnificent Micronesia
magnificentmicronesia.com

Workforce Investment Agency
Micronesian Chiefs Executive Summit
wia.gov.mp/mces.php
When delivering services for business start-ups or expansion, should today’s Extension educators confine themselves to classroom education, research, and fieldwork? Or should they take extraordinary measures to engage and encourage entrepreneurs? Taking extraordinary measures means solving a business’s problems over a longer period, talking consistently to the owner, becoming co-learners to find business solutions together, and finally stepping out of the educational spotlight so that entrepreneurs can step into the role of teaching and mentoring others.

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To meet the entrepreneur’s objectives to create value for their place-based business, it was necessary for Extension to discard the “one solution fits all” model. We committed to continuous problem solving, to having a willingness to “know what we didn’t know,” and to find resources to answer the difficult questions. We decided to break molds that precluded our using a variety of tools and layers in a flexible approach.

Experience shows that we become comfortable in doing things the same way with the same tools because we “know the routine.” However, to fully serve our clientele, it was necessary for Extension to abandon the comfort of the known! Instead, a flexible model was used to add the appropriate tools and layers as dictated by current facts. We focused on:

1. Assisting an existing business to broaden their products and markets;
2. Fostering community development to reach a broader audience in the local food sector;
3. Facilitating the development and implementation of other new local businesses.

The process began locally with one motivated place-based agricultural entrepreneur. There was not a single solution to answer the business problems encountered. Instead, Extension worked organically alongside the entrepreneur with content knowledge and University resources in a collaborative, multi-disciplinary manner to implement their value-added business vision. Their business expansion success and influence, over a period of four years, eventually expanded to community, regional, and national levels.

Existing Business Expansion
To effectively use the management process (Figure 1), Extension needs to utilize careful listening skills and a can-do attitude in working with entrepreneurs. The management process provides both a flexible model and critical framework that can be used to assist existing businesses during their expansion process, where they assess the strategic, tactical, and operational components of their business. The three basic steps to follow are:

1. Strategically articulate business goals and assess resources.
2. Develop alternatives and use a budgeting/economic analysis program to evaluate their viability.
3. Select specific alternatives, implement them, monitor the progress or success, and re-plan as necessary.

Within the framework of the management model there is flexibility in the tools that may be utilized, based upon the needs of the entrepreneur. Livestock versus vegetable operations would have different goals, resources, and market opportunities, which could call for the use of different tools to evaluate the specific needs and alternatives for each operation.

Reaching a Broader Audience
Business success and value-added product expansion by our first business, Blue Sage Farm (BSF), along with Extension’s relevance, educational efforts, and mentoring motivated other entrepreneurs. The partnership fostered development of a new local farmers’ market, five local business startups, three local business expansions, 19 business plans written, a commercial kitchen opened for value-added product development, and consideration for development for a USDA-inspected slaughter facility. The entrepreneurs have expanded marketing across southern Idaho to additional farmers’ markets and restaurants featuring local foods. From simple beginnings, an entrepreneurial-friendly community gradually emerged. Participation and promotion by the community was essential during the process.

University-level beneficial outcomes of Extension’s work with BSF include research and demonstrations on the use of unconventional...
New Business Development

Extension continues to mentor new business operators by encouraging networking among entrepreneurs and offering resources/training based on their needs. This provides a co-learning environment for both large-scale visioning and specific steps to accomplish their goals, while striving to keep them motivated when challenges arise. To aid new business development, it is important to provide business training along with hands-on applications.

New businesses can use the three main steps of the management process, but it will require intensity to develop the needed information. Extension’s role is to provide guidance through the steps in the management process, as well as selecting appropriate assessment tools to provide accurate economic, production, and marketing analysis.

The first critical step for new business owners is to articulate SMART (Specific, Measurable, Attainable, Related, Trackable) goals (RightRisk), and assess necessary resources. Next, the entrepreneur will need to initiate a search for appropriate information and begin the assessment process. They will need to pull information from other resources on what the income potential and expenses may be in the local context. The concept of a place-based business that adds value is maximized when both the production inputs and the market opportunities (MISA) are available locally or regionally.

Finally, to establish the new business, owners will need to acquire the resources, begin production, and develop markets for their products. To keep costs and revenues on track for a new business, progress should be regularly monitored and adjustments made by Extension and the business team in a timely manner.

Summary

This example of an agricultural business expansion demonstrates how entrepreneurial innovation can be a stimulus for additional new businesses in rural communities. An innovative entrepreneur was trained by Extension and has taught at national, regional and local meetings, hosted farm tours, and currently serves as a mentor for other entrepreneurs. Producer audiences relate effectively when other entrepreneurs share practical experiences.

Creating economic and social value with the place-based business expansion by Blue Sage Farm, the resulting expansion of local markets and new businesses for a rural community serves as a powerful example of how Extension is reaching out to extend knowledge to an individual can expand to engagement with community and regional businesses to yield far greater benefits.

Duplicating these efforts to create value for a place-based business requires Extension involvement to be client-centered, with the helpful techniques of active listening, a positive can-do attitude to encourage and motivate people, involving a motivated entrepreneur, and innovation when problem solving.

Extension representative(s) must be willing to look at ideas from the perspective of how to enhance the entrepreneurial environment for the community, as well as search for new or existing tools that will benefit individuals during their business analysis process. The work can begin with one highly motivated entrepreneur, resulting not just in knowledge transmission, but also in transformative education and adoption.

While using the flexible management process, Extension will have time-consuming one-on-one consultations and be conducting research as needed. Staying focused on the economic realities, as well as dreams and goals for the business, is key to long-term success. Once the entrepreneur’s vision is understood, Extension can utilize other resources and disciplines to assist in full implementation. It is also important for Extension and community leadership to promote a viable regional market for entrepreneurial success.

**References**


RightRisk. The Management Process and SMART goals are part of materials on the RightRisk education website at rightrisk.org.

**Recommended Reading**

AgPlan

AgRisk Library

Building Farmers in the West
Contemporary theories and models of sustainable rural development assume that community preferences of development goals are well known and agreed upon by all community members. Rural development initiatives are also assumed to work equally well across different communities. This is not the case in the real world. Even within otherwise homogenous farming communities, the preferences of individual rural citizens such as farmers regarding new development opportunities like biofuels can vary substantially, creating challenges for local entrepreneurship and small business development efforts to be consistent with general community well-being and cohesion.
Better decision support systems are needed to allow community members to collectively choose preferred development paths and to work coherently and strategically to achieve increasingly complex development goals.

As rural development faces both challenges and opportunities presented by changes affecting business environments including accelerating globalization, better decision support systems are needed to allow community members to collectively choose preferred development paths and to work coherently and strategically to achieve increasingly complex development goals.

The Community Business Matching (CBM) process builds on a long history of applied community development research and outreach focused on business recruitment, retention, and expansion. Much of this literature, however, failed to address what type of development the community members desire.
The CBM process (see Figure 1) addresses the gap in the literature and application by using both information on business needs and community preferences. The CBM process elicits community preferences using a replicable and quantitative approach that incorporates the Analytical Hierarchy Process (AHP) to measure the relative importance among the pre-selected development goals (see Table 1). This exercise leads to computation of desirability index. At the same time, a separate survey identifies needs of the businesses for a list of assets such as physical and economic infrastructure (see Table 2), which is systematically compared with their availability in a specific community. This leads the computation of compatibility index. Together, the information assists community development practitioners in designing targeted development strategies.

The CBM process identifies which industry sectors are the most promising for the community’s targeted business recruitment effort by finding sectors that receive high scores for both desirability and compatibility indices. The CBM process also identifies deficiencies in community assets that could be addressed in order to facilitate the targeting and recruitment of firms in the long run. For example, if a desired industry is not compatible because a key asset is missing in the community, then the community can obtain the asset. Or, a compatible industry can be examined to determine why it is not desirable. The community may decide that some firms in the industry are in fact desirable and work with these types of firms and recruit them.

In pilot CBM applications, community leaders have repeatedly expressed that average citizens are capable of understanding the economic structure of their communities and thus capable of participating in the designing of desirable community development. The CBM process combines the rigor of economic modeling with local participation and an emphasis on the interconnectedness of economic, environmental, and social concerns. The CBM takes a quantitative approach to community development where community members can systematically define and prioritize their goals and assets.

“A critical difference between the CBM and other efforts is that the CBM process identifies desirable and compatible industry sectors rather than specific businesses.”
Table 1. CBM Community Development Goals (G) and Indicators (I).

<table>
<thead>
<tr>
<th>Goal</th>
<th>Indicator</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 Economic</td>
<td>I1</td>
<td>Every new job generates additional jobs in the community</td>
</tr>
<tr>
<td>Quality</td>
<td>I2</td>
<td>New businesses return profits to the community</td>
</tr>
<tr>
<td></td>
<td>I3</td>
<td>New businesses hire locally</td>
</tr>
<tr>
<td></td>
<td>I4</td>
<td>New businesses buy locally</td>
</tr>
<tr>
<td></td>
<td>I5</td>
<td>New businesses increase the average local wage</td>
</tr>
<tr>
<td>G2 Environmental</td>
<td>I1</td>
<td>New businesses do not pollute the water</td>
</tr>
<tr>
<td>Quality</td>
<td>I2</td>
<td>New businesses do not release toxic chemicals in the air</td>
</tr>
<tr>
<td></td>
<td>I3</td>
<td>New businesses stay in compliance with hazardous waste management</td>
</tr>
<tr>
<td></td>
<td>I4</td>
<td>New businesses do not emit greenhouse gas</td>
</tr>
<tr>
<td></td>
<td>I5</td>
<td>New businesses do not develop undeveloped land</td>
</tr>
<tr>
<td>G3 Social Quality</td>
<td>I1</td>
<td>New businesses increase the local tax base</td>
</tr>
<tr>
<td></td>
<td>I2</td>
<td>New jobs are full-time</td>
</tr>
<tr>
<td></td>
<td>I3</td>
<td>New jobs offer benefits (health and/or retirement)</td>
</tr>
<tr>
<td></td>
<td>I4</td>
<td>New jobs provide training programs</td>
</tr>
<tr>
<td></td>
<td>I5</td>
<td>New businesses support community activities</td>
</tr>
</tbody>
</table>

Table 2. Community Assets Considered in the CBM Process.

<table>
<thead>
<tr>
<th>Space</th>
<th>Physical infrastructure</th>
<th>Business development environment</th>
<th>Quality of life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undeveloped land</td>
<td>Interstate highway</td>
<td>Cluster of suppliers</td>
<td>Crime rate</td>
</tr>
<tr>
<td>Building space</td>
<td>Package freight</td>
<td>Cluster of customers</td>
<td>Affordable housing</td>
</tr>
<tr>
<td>Expansion site</td>
<td>Railhead</td>
<td>Managerial labor</td>
<td>Clean air and water</td>
</tr>
<tr>
<td></td>
<td>Rail freight</td>
<td>Skilled labor</td>
<td>Natural ecosystem</td>
</tr>
<tr>
<td></td>
<td>Passenger air</td>
<td>Unskilled labor</td>
<td>Outdoor opportunities</td>
</tr>
<tr>
<td></td>
<td>Port/harbor</td>
<td>Labor cost</td>
<td>Social and cultural activities</td>
</tr>
<tr>
<td></td>
<td>International port</td>
<td>Workers compensation tax</td>
<td>Retail shopping</td>
</tr>
<tr>
<td>Natural gas pipeline</td>
<td>Business tax rate</td>
<td>Government incentive</td>
<td>University/college services</td>
</tr>
<tr>
<td>3-phase electric</td>
<td></td>
<td>Union labor</td>
<td>Health care</td>
</tr>
<tr>
<td>Fiber optic</td>
<td></td>
<td>Occupational training</td>
<td>Public safety services</td>
</tr>
<tr>
<td>High-volume water supply</td>
<td></td>
<td>Financial institutions</td>
<td></td>
</tr>
<tr>
<td>Wastewater disposal</td>
<td></td>
<td>Business associations</td>
<td></td>
</tr>
<tr>
<td>Solid waste disposal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell phone signal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public transportation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>High-speed internet</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

“The results of the Anaconda pilot and other pilots in Nevada and Arizona indicate that the CBM process holds great promise for assisting communities with sustainable development.”
Example of CBM Implementation: A Pilot Study in Montana

Anaconda, Montana, faced many economic and social challenges when a copper smelter closed in 1980. In 2002, community leaders became interested in the CBM process because they felt that, while programs to address the development of entrepreneurship and business retention and expansion were already in place, business recruitment as a means of economic development should also be investigated. Subsequently, interested local residents agreed to participate in the first CBM project in the Western region.

Figure 2 summarizes the Anaconda AHP results, which indicate the relative importance of different development goals. The goal and indicator used in this pilot are different from those in the current CBM process listed in Table 1 because the CBM process has changed as a result of feedback from this and other pilot efforts. The weights for the community goals shifted over time and over the cross section of community members involved in the process. For example, the community members rating the goals more heavily weighted the provision of employment opportunities in 2003 than they were in 2006.

Based on the desirability and compatibility scores, the CBM process suggested that opportunities existed in the construction sector even though, in the past, the construction firms were not viewed as members of a desirable and compatible industry sector. The CBM process taught the community leaders that they should focus on the needs of an industry sector in order to be more successful as a community. The CBM committee members were interested in recruiting new companies from this sector, but they also met with local construction firms and assessed the possibilities for their growth. The group recognized that a critical mass of construction projects did not exist in the county and did exist in nearby counties. Subsequently the local firms formed a construction business association that developed into a builders association.

After pooling the resources including space, human capital, and funds of local businesses and of the Anaconda Local Development Corporation (ALDC), cooperative agreements were set up at the ALDC that included initiation of sub-contractor templates, formulation of a “plan exchange,” and a blueprint copy service. The plan exchange gave greater access to local contractors to bid on projects outside the area. The association also put together a marketing campaign aimed at general contractors to position themselves as major sub-contractors. Web sites, a DVD demo, and brochures aimed at new residents interested in building custom homes were developed. Traditionally, builders located in larger communities where architects reside won these contracts. Since the CBM effort was initiated, Anaconda’s construction businesses have grown and are working in other communities. Some have been competitive with larger, local contractors and have

![Figure 2. Anaconda AHP Weighs Results for Community Development Goals.](image-url)
The benefits associated with the CBM process can be contrasted with those of a retention and expansion program that had previously been developed in the community. A critical difference between the CBM and other efforts was that the CBM process identified desirable and compatible industry sectors rather than specific businesses. After identifying the construction sector as a target, the community spent considerable time examining forward and backward linkages: industries that supply inputs to and purchase the outputs of the construction industry. Thus, the group of activities associated with construction and the benefits associated with grouping all construction activities together were considered. Through implementing the CBM process, the community also gained community development knowledge and skills. In particular, the community better understands the economies of scale associated with industry clusters.

Another outcome of the CBM effort in Anaconda is the ALDC’s recruitment of firms that supply the inputs needed by the construction industry and firms that needed construction services. As a result, three such firms have relocated to the area, including two manufacturers of insulation products and one supplier of major West Coast distributors. While all of these businesses are small, all with less than 14 employees, the community hopes they will grow to firms of 25 to 50 employees.

Anaconda’s CBM committee feels they now have much insight into what processes are necessary for local businesses to pool resources and grow together. The community preferences for development goals identified in the CBM process helped the community to understand what is important and what to focus on, which in turn led to the understanding of how to partner with the larger Butte-Silverbow County to successfully attract new business. The success of the Anaconda pilot led to a six-county regional CBM project.

The results of the Anaconda pilot and other pilots in Nevada and Arizona indicate that the CBM process holds great promise for assisting communities with sustainable development. The CBM process is applicable to virtually any community. Although it is usually applied to a county, applications to a city, a group of cities or counties, and entire regions can be accommodated. The USDA and other federal agencies increasingly look to the concept of regional development as shown with programs such as USDA Rural Development’s Stronger Economies Together that utilize regions as essential drivers of economic growth. The CBM process offers a flexible tool that can help with regional development decisions. Any community or region that has the desire, the will, and sufficient resources to commit to the goal of sustainable community development can participate in the process.

**Conclusion**

The 2007-09 national recession was much different from other national recessions since World War II. Quantitatively, the 2007-09 national recession closely resembled the Great Depression particularly in its large impacts to the labor market. The national impacts trickled down to state and regional economies that had not seen such high unemployment rates since the Great Depression.

Many rural communities that want to address the employment loss of this recession need a focus and effective economic development process and strategy. The Community Business Matching model provides communities with a tool and process that can address the aftermath of recent economic events. Community involvement in goal setting and local resource assessment as well as understanding the demands of businesses in location and relocation provides an avenue for a community to educate itself for a more sustainable long-term economic development program.

For the CBM process to generate better results, a larger dataset of business profiles is needed. Currently, efforts are underway to obtain the funds needed to greatly expand the business database by surveying more businesses. Once the funds are secured and the business database expanded, training workshops for community facilitators will be held. Grants and contributions by interested communities and other entities are welcome. For more information, please contact Linda Cox at 808-956-7602, lcox@hawaii.edu, or Tom Harris at 775-784-1681, harris@unr.edu.

**RECOMMENDED READING**


In frontier and rural areas, reliable transportation within small towns and from small towns to larger communities is one of many challenges, as residents pursue employment, educational opportunities, medical needs, and recreational activities, and make other necessary trips. Access to transportation services is a key to sustaining the livelihood and enhancing the vitality of smaller communities in a rural region.

Problem
Transportation has been a major need for people living in the Hi Line region of north central Montana; residents often must travel to obtain or retain employment, receive an education, and gain access to medical care and other basic services. Blaine and Hill Counties along Montana’s border with Canada were without public transportation services for nearly 20 years. A previous transit system had offered limited service connecting two towns, Havre and Great Falls, but eventually ceased operation.

Havre is the Hill County seat, with a population of 9,700, and offers medical, employment, and retail services. But the population density in the outlying areas is low—1.5 residents per square mile—so that establishing a transit system that would allow residents access to services in Havre was difficult. In addition, two Native American reservations, Rocky Boy’s in Hill County and Fort Belknap in Blaine County, had struggled to provide transit services within and outside their boundaries.

Solution
Initiating a regional transit service in this area had been a key goal of Opportunity Link, Inc., a nonprofit organization based in Havre. The organization strives to create and implement strategies to reduce poverty in the Hi Line region and to encourage community-driven partnerships. In August 2008, efforts began on the development of a transit service.

Dubbed North Central Montana Transit (NCMT), the proposed service aimed to connect Havre, the largest city in the region,
to Harlem, Chinook, and the Fort Belknap Indian Reservation in Blaine County, and to Box Elder and Laredo in Rocky Boy’s Indian Reservation. Additional service would connect all of these communities to Great Falls, Montana, 114 miles from Havre. Great Falls is the only urban community in the area, with larger medical, educational, and retail facilities.

Opportunity Link enlisted the public transit research expertise of the Western Transportation Institute (WTI) at Montana State University–Bozeman. The WTI team was asked to provide project management and to develop a plan for implementing public transportation on the Hi Line.

WTI's coordination plan considered the resources available for a transit system and how the various stakeholders would work together to implement and support the proposed service. The plan was developed through community meetings and through meetings with key partners, such as the tribal and county governments. The planning process also included the system’s partner agencies and organizations, as well as representatives of the communities and areas to be covered by the bus system, in considering the proposed routes and services.

Route planning tasks addressed specific operational details, such as identifying origins and destinations and the best routes for connecting those points. The cost of operating these routes was compared against a draft budget, and adjustments were made to keep service levels and the overall cost of the services within the budget. The routes and service levels were modified several times as updated budget information became available.

As part of the process, stakeholders formed a Transportation Advisory Committee (TAC) consisting of elected officials; representatives from senior centers, transportation agencies, and medical, education, social service, community-based, and minority advocacy organizations in Hill and Blaine Counties; and representatives of tribal agencies from the Fort Belknap and Rocky Boy’s Indian Reservations. The North Central Montana Regional TAC approved the coordination plan in February 2009.

Application With the help of WTI, Opportunity Link submitted the application and coordination plan to the Montana Department of Transportation’s

“As of March 2010, NCMT ridership had increased to an average of 300 to 400 rides per week, with a monthly average of nearly 1,600 rides. The weekly totals matched what some had projected for the monthly ridership totals.”
Operating Grant Program. In the application, the TAC requested $75,000 for operating funds from the Federal Transit Administration and three 21-passenger buses. Partners including Montana State University-Northern, Blaine and Hill counties, Northern Montana Hospital in Havre, and other local agencies and organizations provided local funding.

On August 24, 2009, one of the new NCMT buses, with 18 passengers on board, made its maiden voyage and more than 200 supporters cheered it on. In the first week of operation, NCMT provided 139 rides, followed by more than 200 rides in the second week, when the line received its first request for posting marketing materials in the buses. As of March 2010, NCMT ridership had increased to an average of 300 to 400 rides per week, with a monthly average of nearly 1,600 rides. The weekly totals matched what some had projected for the monthly ridership totals.

Benefits

In urban areas, public transportation, or transit, is often viewed as a means to address congestion. In rural and frontier areas, however, transit is often needed to provide mobility for those who lack access to basic services—such as the grocery store, medical care, or education. Despite this critical need, public agencies traditionally have considered transit systems infeasible and unaffordable in areas with low population densities.

The successful creation of a transit system within a region can expand viable transportation options, providing economic and environmental benefits for the communities and an improved quality of life for residents. For this reason, the Federal Highway Administration and the Federal Transit Administration recognized Opportunity Link and its partners in NCMT with the 2010 Transportation Planning Excellence Award. The biennial award recognizes outstanding initiatives to develop and implement innovative transportation planning practices. NCMT was honored in two categories: Planning and Leadership and Tribal Transportation Planning. NCMT has shown that public transportation can succeed in rural and frontier areas through partnerships and coordination.

For additional information, contact David Kack, Western Transportation Institute, 2327 University Way, Bozeman, MT 59715; telephone: 406-994-7526; email: dkack@coe.montana.edu.

EDITOR’S NOTE: Appreciation is expressed to Peter Shaw and G. P. Jayaprakash, Transportation Research Board, for their efforts in developing this article.

UPDATE

Since this article was first published, Opportunity Link has increased its coordination with the transit systems on the Rocky Boy and Fort Belknap Reservations, and MSU Northern’s YouthBuild program. In addition, North Central Montana Transit has provided service to get kids to the Boys & Girls Club in Havre, which increases ridership to over 2,000 rides per month during the summer. North Central Montana Transit is using biodiesel fuel in its buses that is grown and produced locally, with support of MSU Northern.
Oregon State University barley breeder, Dr. Pat Hayes, stands in a field of barley with farmer Wilbur Bishop of Coupeville, Washington. The barley growing in the field is from a variety called ‘Alba,’ developed by Hayes to be well adapted to conditions in the Coastal Pacific Northwest. Photo credit: Elizabeth Dyck

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Andrew Corbin is Agriculture and Natural Resources Faculty at Washington State University Extension in Snohomish County in Everett, Washington.

Stephen Jones is director of Washington State University Northwestern Washington Research and Extension Center in Mount Vernon, Washington and a professor of Crop Science.
Imagine it—biting into a pretzel made with wheat grown in your own community and following that with a sip of cool beer made from barley grown and malted nearby.

Unless you are talented enough to perform all of the steps involved in production, processing, baking, malting, and brewing, the search for this experience could turn into a long quest.
Though the “localvore” movement is alive and well in many parts of the U.S., it has focused primarily on fresh produce, meat, eggs, and dairy and has overlooked the grains that are an important staple in human diets. One reason for this is the massive amount of consolidation through the supply chain in global grain markets. In fact, five major companies now control 80 percent of the global grain trade (Pugh & McLaughlin, 2007). The consolidation in processing is such that even in a major wheat growing state, like Kansas, it can be difficult to source local flour (Henning, 2011).

The alternative to the current dominant industrial system is that of decentralized independent production, processing, and distribution networks. The creation of such networks has the potential to generate income for processors, improve farm profitability, reconnect communities with their agricultural heritage, and recapture the idea of grain as a healthy “food from somewhere” rather than as an interchangeable commodity. Costs of staple grains would reflect the true cost of production, not the volatile swings characteristic of grain prices decided in Minneapolis, Kansas City, or Chicago.

Is this vision of localizing grain growing and production just a utopian dream? Not according to the food system pioneers working on independent yet parallel fronts in places like Vancouver Island, British Columbia; Mount Vernon, Washington; Athens, Ohio; and Asheville, North Carolina (Hanus, 2010; Hergesheimer & Wittman, 2011; Appalachian Staple Food Cooperative; Wolfe 2011). None of these places are commonly associated with modern-day grain production, yet each has a legacy of small-scale grain growing now being rediscovered, one field at a time.

The coastal Pacific Northwest is one of several U.S. regions working to reclaim their grain heritage. Its initial success suggests that this local movement could serve as a useful case study for others considering similar efforts. Communities in the coastal Pacific Northwest from Northern California through British Columbia (areas west of the Cascade Mountains) are interested in reviving the infrastructure necessary for drying, storing, and processing small grains in order to meet growing consumer demand.

In the Skagit Valley in Northwest Washington, wheat and barley are typically grown in rotation with higher value crops for their rotational benefits, but the harvested grain is sold for minimal return on the commodity market. Meanwhile, end users such as bakers, millers, maltsters, brewers, and livestock producers are sourcing small grains and grain legumes from as far away as Saskatchewan. The potential exists for a locally integrated small grain system in this region, creating shorter supply chains with the ability to preserve information about who produced the grain and where it was grown.

**Infrastructure**

The infrastructure required to support the processing of grains in the coastal Pacific Northwest existed in the past, but has been lost over time due to the consolidation of agricultural production and processing. The proximity of agricultural land to urban populations...
in this region poses a paradox of opportunities and challenges as the region attempts to balance farmland preservation, urban development, and the sustainable management of natural resources.

Residents of the coastal Pacific Northwest care about their food supply, support local agriculture, and are interested in how to replace the infrastructure needed to maintain a local grain system. Farmers have a need for grains as a rotation crop to break disease cycles and improve soil quality. There are a variety of possibilities for end uses for local grain, with those commanding a higher price, such as flour, being the most attractive to farmers. However, it is critical that there are also outlets for grain that does not meet the strict quality standards for flour. For this reason, a robust local grain system must also include brewing, distilling, and feed for livestock.

These end uses require some common infrastructure. Agricultural production equipment such as grain drills for planting and combines for harvest, are already prevalent in areas where wheat is grown for commodity markets. Facilities for cleaning and storing seed to keep grain dry and pest-free will also be required.

Grain processing equipment varies by grain type and its intended use. Producing wheat for human consumption provides the greatest possible return to farmers. There are several steps involved in the processing of grain. Food uses of barley, oats, and spelt require seed hulls be removed with dehulling equipment. Wheat is free threshing, meaning the hull detaches during harvest. A hammer, stone, or roller mill is needed to process grain into flour. Each of these types of mills can provide whole grain flour. However, producing the white flour used most commonly by commercial bakers requires more sophisticated roller mills that sift out the bran and further reduce particle size.

“The potential exists for a locally integrated small grain system in this region, creating shorter supply chains with the ability to preserve information about who produced the grain and where it was grown.”
“Breeding for wheat and barley varieties adapted to the coastal Pacific Northwest is occurring at Washington State University Mt. Vernon and at Oregon State University, which will give coastal grain growers better-adapted varieties.”

It’s Not Just Wheat

Though wheat is the most commonly consumed grain in American diets (USDA, 2003), there are other grains worthy of consideration in local grain systems. Malt is the highest value use for a barley crop. Malted barley is sprouted in a controlled way, which causes a spike in enzyme activity needed for the fermentation process. While most microbreweries use malt produced on a huge scale for national markets, there has been increasing interest from microbreweries in sourcing locally grown and malted barley. When barley or wheat doesn’t meet the quality standards necessary for malt or flour, respectively, due to weather conditions or other factors that can decrease crop quality, these grains can be used in distilleries.

Washington has seen a rise in micro-distilleries due to a passage of a 2008 law creating a craft-distilleries license (Allison, 2009). The law requires that 51 percent of ingredients used by craft distilleries be sourced from in state. In areas like western Washington with animal integrated agriculture, cereal grain can be used to meet local demand for an energy ingredient in livestock feed. Processing for this use generally involves cracking the grain by using a hammer mill for easier digestibility.

Once the processing infrastructure and marketing networks exist for wheat and barley, expanding the infrastructure for other types of grains like rye, oats, triticale, niche heritage grains, and dry beans would be relatively simple. Variety and crop choice will vary depending on regional environments, but the ambitious farmer can find many locally adapted varieties if sourced outside of the standard routes. Breeding for wheat and barley varieties adapted to the coastal Pacific Northwest is occurring at Washington State University Mt. Vernon and at Oregon State University, which will give coastal grain growers better-adapted varieties.

Supporters of this relocalized grain system are not proposing that every county, or every region be completely self sufficient in grain. However, with some strategic investments in infrastructure in consultation with end users, a significant portion of grain purchased for use in baked goods, beer, distilled beverages, and livestock feed could be sourced locally, keeping dollars in the local economy.

Stories from the Coastal Northwest

This work is going on in many areas of the coastal Pacific Northwest. In Eugene, Oregon, Tom Hunton recently opened Camas Country Mills in response to a demand for local flour and grain (Dietz, 2011). In the same region, the Southern Willamette Valley Bean and Grain project, a collaboration of growers and community organizations, began formally meeting in 2008 building on previous work to increase local production for local consumption. Further north, in Corvallis, Oregon, Dr. Pat Hayes and Dr. Andrew Ross of Oregon State University are working to boost the consumption of locally grown barley. Hayes has been involved with a new mini-malter designed by students to test small batches of malting barley (Foyston, 2010). Ross has been working hard on developing ways to incorporate healthy doses of barley into delicious baked goods, such as breads and pretzels.

Continue north past Seattle to Mt. Vernon, Washington, where researchers are looking into production strategies for growing organic bread wheat in Western Washington. Preliminary data shows that in the climate of Western Washington it is possible to achieve the protein levels in wheat required by craft bakers (Hills, in preparation).

George DePasquale (2010), the owner and head baker at a large Seattle bakery said about the bread he made from flour grown in Mt. Vernon: “It had the best flavor I’ve tasted in my 33 years of baking.”
Preparations are underway for the first Kneading Conference West, a meeting of artisan bakers, millers, farmers, and grain enthusiasts to be held September 15-17, 2011. Across the border in Canada there are new ideas being tested for marketing grains. The Urban Grains CSA began supplying grains to the Vancouver, British Columbia, market in 2008 (www.urbangrains.ca) using the same Community Supported Agriculture model now commonly used by diversified vegetable producers. A Victoria, British Columbia, brewery has created a beer with all ingredients grown within 24 miles (Kloster, 2010). Intrepid agronomists in Alaska have even developed a locally adapted hulless barley variety, Sunshine, featured in the November 2009 issue of Rural Connections (Tarnai, 2009).

Moving Beyond a Niche Market

One objection often raised about purchasing local grain is the potential high cost. This is a valid concern when the flour from the western part of Washington is commonly sold in 1-2 lb. bags for $4-6. However, if production and processing were increased even moderately, the economy of scale would drive the cost down substantially. And many local bakers are interested. A survey of 70 commercial bakers in Western Washington found those interested in sourcing flour locally represent 3.5 million lbs. of flour annually (Hills et al., 2011). The three issues most frequently cited as concerns by commercial bakers were cost, availability, and suppliers. Each of these concerns could be addressed by a moderate increase in the scale of production and processing.

We’re at the point where it is cheaper for bakers in Kansas to import wheat from Montana to bake a loaf of bread, not by chance, but through a coordinated effort to build infrastructure for an agricultural system based on exports and industrial scale processing. Regional efforts to restore infrastructure for local grain systems on a scale matching local markets could provide opportunities for economic development, improved access to healthy whole grains, and preservation of the working agricultural landscape. Farmers, entrepreneurs, and researchers are working hard to make locally-produced pretzels and beer a reality.

References

Appalachian Staple Food Cooperative. asf.weebly.com
The Southern Willamette Valley Bean and Grain Project. mudcitypress.com/beanandgrain.html
Introduction

In today’s technology driven marketplace, it is assumed that advanced Information and Communications Technology (ICT) infrastructure is a prerequisite to developing a tech-savvy workforce, developing local competitive advantage, and ensuring economic development success (European Union, 2002, Department of Trade and Industry (DTI), 2001). High-speed Internet access, in particular, has received much recent attention since most promising computing applications require this access (Eberts, et al, 2005).

For the purposes of this research we define ICT as all forms of technology used to create, store, exchange, and use information. It can include any communication device or application, including telephones, cellular phones, computer and network hardware and software, and regular and advanced bandwidth infrastructure. Additionally, we assume that advanced ICT incorporates Broadband technology and can thus be viewed synonymously throughout this research.
While firms and regions may require this technology, it is not ubiquitous. In the United States there continues to be a digital divide across geographies, regions, racial groups, age groups, and income classifications. Moreover, in many communities, existing broadband service providers are thought to be the only viable broadband suppliers, even though deploying advanced networks to sparsely-populated rural regions does not often meet their profitability objectives.

Given the importance of advanced ICT investments to economic and social development, many communities and regions must find other ways to enhance their access to Broadband infrastructure. Traditional service providers have responded to these efforts with their own legislation, mainly at the state policy level, to restrict municipal involvement in the industry. There is increasing concern that these restrictions place underserved communities and regions at risk of falling further behind, making these communities less attractive places to start or expand a business.

This article begins by briefly reviewing relevant literature on the economic benefits of Broadband, followed by an overview of U.S. broadband penetration and adoption trends, and a review of the legal barriers that states have enacted in an effort to restrict local ICT investments. Results show the impact of ICT policy restrictions on state-level small business...
Regional and Rural Broadband Benefits

Katz et al. (2010) estimate that rural wireless Broadband could result in the creation or retention of 117,000 jobs in the nineteen states with the lowest Broadband access and adoption rates. Table one illustrates these states along with the percent of the population considered underserved or unnerserved, as well as household and population broadband penetration. These authors also estimate the economic impacts of rural wireless Broadband in three relatively underserved states: Kentucky, Ohio, and West Virginia. Assuming Broadband availability of 100 percent, between 2011 and 2014, these authors estimate 10,235 jobs will be saved or created in Kentucky; 5,744 in Ohio; and 4,793 in West Virginia. In Kentucky the majority of jobs saved or created would be in rural areas adjacent to metropolitan communities, while in Ohio and West Virginia the majority of jobs would be concentrated in isolated, rural communities. These differences are speculated to be due to differences in regional Broadband supply gaps. Enhancing Broadband availability is also estimated to increase the growth of county median income by 2.1 percent in Kentucky, 0.8 percent in Ohio, and 3.43 percent in West Virginia. Overall, with 100 percent Broadband deployment from 2011-2014 these states are estimated to create or save 116,863 jobs and to increase the median per capita income by $1,201.

One small regional study (Strategic Networks Group, 2001) found significant positive impacts from the local deployment of a Broadband network in South Dundas, Ontario. Additionally, Kelley (2004) compared the economic effects of a municipal Broadband deployment in Cedar Falls, Iowa, with nearby Waterloo, Iowa. Ford and Koutsky’s (2005) study compared Lake County, Florida, with similar counties where advanced telecommunications

Table One: States Lagging in Broadband Accessibility.

<table>
<thead>
<tr>
<th>State</th>
<th>Percent of Unserved or Underserved</th>
<th>Number of Broadband Lines</th>
<th>Households</th>
<th>Household Penetration¹ (percent)</th>
<th>Population</th>
<th>Population Penetration² (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Virginia</td>
<td>26</td>
<td>442,000</td>
<td>748,517</td>
<td>59</td>
<td>1,819,777</td>
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<td>25.2</td>
<td>516,000</td>
<td>1,124,947</td>
<td>46</td>
<td>2,889,450</td>
<td>18</td>
</tr>
<tr>
<td>Mississippi</td>
<td>23</td>
<td>447,000</td>
<td>1,095,026</td>
<td>41</td>
<td>2,951,996</td>
<td>15</td>
</tr>
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<td>162,000</td>
<td>236,597</td>
<td>68</td>
<td>698,473</td>
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<td>S. Dakota</td>
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<td>316,638</td>
<td>57</td>
<td>812,383</td>
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<td>Montana</td>
<td>17.3</td>
<td>212,000</td>
<td>375,287</td>
<td>56</td>
<td>974,989</td>
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<tr>
<td>N. Dakota</td>
<td>16.5</td>
<td>155,000</td>
<td>279,014</td>
<td>56</td>
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<td>Kentucky</td>
<td>15.7</td>
<td>876,000</td>
<td>1,694,197</td>
<td>52</td>
<td>4,314,113</td>
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<td>389,000</td>
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<td>2,339,684</td>
<td>54</td>
<td>5,987,580</td>
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<td>13.5</td>
<td>122,000</td>
<td>213,571</td>
<td>57</td>
<td>544,270</td>
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<td>1,430,019</td>
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<td>Louisiana</td>
<td>12.8</td>
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<td>1,848,051</td>
<td>49</td>
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<td>11.6</td>
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<td>1,104,976</td>
<td>60</td>
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<td>Virginia</td>
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<td>1,904,000</td>
<td>2,971,489</td>
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<td>Tennessee</td>
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<td>2,447,066</td>
<td>51</td>
<td>6,296,254</td>
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<td>Maine</td>
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<td>330,000</td>
<td>544,855</td>
<td>61</td>
<td>1,318,301</td>
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<tr>
<td>Total</td>
<td>14.1</td>
<td>13,602,000</td>
<td>24,846,160</td>
<td>55</td>
<td>64,234,156</td>
<td>21</td>
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</table>

¹Household penetration is the percentage of households in a state with access to broadband lines.
²Population penetration is the percentage of a state’s population with access to broadband lines.

networks were not deployed. Overall, these studies indicated that community investments in advanced ICT infrastructure have a positive influence on regional economic growth and development.

**Current Broadband Trends**

Over the past decade, Broadband deployment, adoption and use have continued to increase across all communities and socio-economic characteristics. The FCC National Broadband Plan estimates there are currently 7,035,613 United States housing units identified as unserved or underserved. The FCC defines a region as un-served or under-served if housing units do not have access to service of 4 Mbps download speed. The largest portions of these households are in rural areas most likely because of lower population densities and/or economically distressed populations.

As communities and regions have become increasingly concerned about their lack of adequate access to broadband service, many have sought to make these investments on their own. Municipalities with locally-owned municipal electric utilities have been more likely than others to serve as early adopters of ICT projects. These municipalities can often justify investments in network infrastructure (e.g. fiber optic routes, routers, and switches) simply to reduce the cost of providing cost-saving internal-to-the-utility administrative services (e.g. automated meter reading, internal communications, and system controls).

While interest in public investments in broadband infrastructure has grown, there has been corresponding growth in state-level policies imposing barriers on the municipal provision of broadband infrastructure and service. Among other things, traditional private sector providers have lobbied for the promulgation of policies that create supposed “level playing fields” between private and public providers. Notwithstanding attempts at the federal level

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<td>102,467</td>
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<td>Idaho</td>
<td>436,991</td>
<td>82,345</td>
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<td>76,423</td>
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<td>109,262</td>
<td>24.6</td>
<td>Yes</td>
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<td>120,612</td>
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<td>75,728</td>
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<td>81,478</td>
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<td>67.9</td>
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<td>West Virginia</td>
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<td>23,523</td>
<td>77.1</td>
<td>No</td>
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<td>Wyoming</td>
<td>172,438</td>
<td>96,936</td>
<td>5.8</td>
<td>No</td>
</tr>
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</table>

to negate state level barriers to these investments, a host of state-level policies exist across the country.4

Figure One illustrates that in 2010 eighteen states had some type of policy restriction concerning municipal involvement in advanced ICT infrastructure projects. This map documents the range of restrictions; from explicit bans to procedural and accounting mandates; many of which are substantive barriers to entry. Moreover, this policy environment is not static. In 2005, 14 state legislatures across the U.S. sought to impose new barriers, but only one state, Nebraska, saw the passage of new policy restrictions. The 2010 legislative cycle saw newly proposed restrictions in North Carolina and 2011 saw amendments to existing legislation in South Carolina. Neither legislation passed but states continue to propose this type of legislation each year. While the proposed reason for state legislation varies, the real question is what are the impacts of these restrictive legislative environments? Does this type of legislation ultimately place additional constraints on community economic growth and development?

Model Results

This analysis helps us understand the impact of ICT policy restrictions on state small business and entrepreneurial activity. Using publicly available data for all fifty states from 1999-2006 (excluding 20055), six dependent variables are examined: 1) the number of new companies; 2) the change in the number of new companies; 3) new business job growth; 4) technology industry employment; 5) the proceeds of initial public offerings, per 1000 firms within a state; and 6) the number of patents.

Statistical tests were used to test for the impact of state level ICT restrictions on state job growth. To test for the importance of rurality, separate tests were run on states with population densities less than the national average of 87.1 inhabitants per square mile and on those with higher average densities. Table Two presents an overview of the population and policy environment in the 22 states with densities below the national average.

In states with lower densities there is a negative correlation between state level ICT restrictions and new business job growth and technology jobs in a state. While further research is necessary to confirm this relation-

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4Baller-Herbst Law group at www.baller.com keeps an up-to-date list of restrictive state policies and links to the specific legislation within the state.

5The dependent variable data came from the Center for Enterprise Development’s, Development Report Card for the States. There was no Development Report Card in 2005 and thus, too many variables would have been missing in an analysis of 2005.
ship, initial estimates reveal that in states with lower population densities, ICT restrictions may contribute to lower overall new firm job growth and fewer technology jobs in a state. For states with population densities higher than the national average, there is a positive relationship between state level ICT restrictions and patent activity and technology company employment. These were the only two variables that were statistically reportable. This is opposite of the relationship with lower density states and highlights the potential importance of Broadband technology for regions with lower density. However, these results are preliminary and only provide initial insight into the potential impact of these policies on state small business and entrepreneurial activity. Future research should consider the inclusion of a wider range of variables that may also impact and/or interact with state small business growth and entrepreneurial activity. However, these results underscore the importance of the ICT policy environment on state business activity, along with the sensitivity of these results to population density and levels of rurality.

Conclusions

It is unlikely that states with ICT legislative restrictions intend to limit business and/or entrepreneurial activity with these policy actions. However, in a more competitive, global business environment there may be a required set of technological infrastructure elements that must be in place for many new firms to be successful and existing ones to be innovative. As such, efforts that limit the potential growth of this infrastructure may indeed have substantial short- and long-term consequences.

These preliminary estimates reveal that advanced ICT infrastructure may be an additional pre-requisite to successful community and economic development. This may be especially true for rural states. Future research should consider further clarification of the impact of these policy measures on a state’s economic and business environment, along with the importance of measures of rurality on these relationships. Additional research should consider how these policies interact with other state level characteristics. This research is an important first look at the possible consequences of these policy measures, and begins to discuss critical infrastructure issues that are important for the future of all of our nation’s communities.

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The Digital Economy in the Western U.S.

BY PETER L. STENBERG AND ROBERT DINTERMAN
The Internet has become widely used by businesses, households, and governments. As more activities, including education, medical, and commercial, have shifted to the Internet its use has become so prevalent that the Internet has become viewed by many as a need rather than a luxury.

Peter L. Stenberg is a regional economist at the Economic Research Institute, USDA.

Robert Dinterman is with the Department of Economics at North Carolina State University.
Education programs and offerings have become richer. Some medical services may lend themselves readily to the Internet environment, with potential cost savings for rural residents and medical clinics that offer in-situ services not otherwise readily available in rural settings. Rural businesses are adopting more e-commerce and Internet practices, enhancing economic vitality and expanding market reach. Telework is becoming a more practical option for workers and businesses. Individuals are using the Internet to get involved with their communities.

The Internet, however, has not become universally available to all households. Rural and poor regions have had less access, especially high-speed access, to the Internet. As one consequence federal and state policies have been implemented to increase Internet access across the country.

Increasing Rural Internet Use
Rural Internet use has increased considerably over the last ten years and while it may at times seem like everyone is online, this is not the case (Figure 1). The number of households newly gaining Internet access, though, has slowed down considerably over the last few years. With the increasing sophistication of websites and online products and services, accessing the Internet through broadband technologies has become increasingly necessary, as well as the technology of choice for households (where broadband service is available) in order to fully utilize what the Web has to offer.

Who has Internet Access?
Sixty percent of American urban households now have access to the Internet in the home while only 49 percent of rural households have access. Rural households in the West, however, are, on average, more likely to go online than other rural households; 55 percent of western rural households while only 48 percent of other rural households had Internet access at home (Figure 2). Although high-speed access has increasingly become necessary to use the Internet, not all households have broadband. Once a household has Internet access, however, they are most likely to have high-speed access; 93 percent of online households in urban areas, though this falls to 88 percent in rural areas (Figures 1 and 3).

Figure 1: Internet Access in Rural Households, 2000-2009

![Figure 1: Internet Access in Rural Households, 2000-2009](image.png)

Figure 1. Internet Access in Rural Households, 2000-2009.
Note: BB means households with broadband Internet Access.
Sources: ERS using Census Bureau survey data.
Figure 2. Rural Households with in-home Internet Access, 2009.
Source: ERS using Bureau of the Census survey data.
Note: “Rural” is the Office of Management and Budget’s definition of nonmetropolitan.

Figure 3. Rural Online Households with Broadband Access, 2009.
Source: ERS using Bureau of the Census survey data.
Note: “Rural” is the Office of Management and Budget’s definition of nonmetropolitan.
Western rural households, however, have less access than their western urban counterparts. Rural broadband access has also been of a lower quality than in urban areas with rural households relying more often on satellite and wireless connections than households in urban areas.

Why doesn’t everybody have broadband Internet access?
While the rural West has done better than some other rural parts of the country in getting broadband access to the Internet, many challenges remain for the region to obtain and maintain broadband Internet access. Rural areas by their very nature of low population do not have the economies-to-scale that urban areas have, thus making broadband Internet access less affordable for businesses and consumers. In addition, some of the West’s mountainous terrain and harsh weather present additional challenges.

Not having broadband in the home, however, is sometimes by choice (Figure 4). It has been many years since the start of the Internet age; the largest plurality of those who do not have home broadband Internet access are those who do not want it. In the West, however, this is less likely to be the case than in any other part of the country.

Service cost still remains the other major reason for not having broadband Internet access. Nevertheless, rural areas have had many gains in broadband access over the last few years. The decrease in the cost of broadband technologies has had a significant impact on increasing Internet use, as have the federal broadband programs. Nevertheless, as can be seen in Figure 5, household income plays a significant role in household broadband Internet access. Rural household Internet access, at any given income level, generally falls below the correspondent urban household Internet access rate, this is one indication that broadband service has not been as readily available in rural areas as in urban areas.

Government Policy has led to higher levels of broadband Internet access
Bringing broadband service to rural areas is expensive, but private service providers have been rolling out the service in many areas. Federal and state government policy has been a noteworthy factor in increasing its availability in the rural West and the rest of the country, mostly by leveraging funds.
The Rural Utility Service of the U.S. Department of Agriculture (USDA) has been the lead agency for rural areas through four programs, the: (1) traditional rural telecommunication infrastructure program requiring all facilities to be broadband capable; (2) farm bill broadband program (authorized by the five-year farm acts, the Food, Conservation, and Energy Act of 2008 is the latest of these); (3) Community Connect Broadband Grant Program; and (4) joint U.S. Department of Commerce (USDoC) and USDA administered broadband programs resulting from the American Recovery and Reinvestment Act of 2009.

Over the last ten years the traditional infrastructure program has lent out over $5 billion to rural telecommunication service providers for improving and maintaining rural telecommunication infrastructure and requires the facilities receiving the loans to be broadband capable. The farm bill broadband loan program has lent out over $1 billion to rural providers to build broadband capable facilities over the last decade. The Community Connect Broadband Connect Grant Program services rural communities least likely to receive broadband service and has provided over $86 million in grants during the last ten years.

The American Recovery and Reinvestment Act of 2009 provided more than $7.2 billion over two years. The USDoC administered $4.7 billion in grants for all parts of the country. The USDA administered the remaining $2.5 billion to provide $2.3 billion in grants and $1.2 billion in loans to rural service providers.

**In summary**

More activities are shifting to the Internet. Some of these activities have great potential value for the rural economy and rural communities are invested in the digital economy, though equal access across the rural-urban landscape remains questionable. Rural households are almost as likely as urban households to use the Internet, but are less likely to use broadband. Rural businesses are less likely than urban businesses to use the Internet. Broadband access is less prevalent in rural areas than in more densely populated areas. Nevertheless, government policy and on-going technological changes have been improving its availability. 

The views expressed are those of the authors and do not necessarily reflect the views of the Economic Research Service or the U.S. Department of Agriculture.

The West is defined as the 13 states constituting the region covered by the Western Rural Development Center: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming.

**Figure 5: Rural and urban household at-home Internet access using any technology, by income 2009**

<table>
<thead>
<tr>
<th>Household income (dollars)</th>
<th>Percent of Households</th>
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</thead>
<tbody>
<tr>
<td>10,000 To 12,999</td>
<td>Western Urban</td>
</tr>
<tr>
<td>15,000 To 19,999</td>
<td>Western Rural</td>
</tr>
<tr>
<td>20,000 To 24,999</td>
<td>Rest of US Urban</td>
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<tr>
<td>25,000 To 29,999</td>
<td>Rest of US Rural</td>
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<td>100,000 To 149,999</td>
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<tr>
<td>150,000 and Over</td>
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</tbody>
</table>

Figure 5. Rural and Urban Household at-home Internet Access Using any Technology, by income, 2009.
Source: ERS using Census Bureau survey data.

**RECOMMENDED READING**


small community

Pictured: Street view of the town of Glenwood, WA. A meadow in Glenwood Valley with Mt Adams in the background. Linda Williams and Brian Wanless Telecom Committee founding members.
“It will cost $1 million to bring broadband to this town and there just isn’t a business case to do that,” was what community members in Glenwood, Washington, were repeatedly told. Located at the foot of Mt. Adams, 35 miles from the Columbia River, Glenwood is a geographically isolated small town of about 500. Forestry and agriculture have dominated local commerce, but given the decline in these industries, community members have been looking for new business opportunities and ways to keep or attract younger people.

Although securing broadband is a challenge even in more densely populated regions, Glenwood leaders knew it was vital for economic diversification and reducing the “brain drain.” The community had tackled tough issues before and in 2007 the hard work began to acquire high-speed Internet access.

With a double-digit poverty rate, Glenwood was already one of 40 Washington rural communities participating in Horizons, a Northwest Area Foundation poverty reduction and leadership capacity-building program led in the state by Washington State University Extension. As part of the program, residents participated in research to determine community satisfaction, identify ways to improve the quality of life, and create prosperity. In Glenwood, and the eight other Horizons communities in the Columbia Gorge region, job creation was identified as the top need.

Based on this research and input about the importance of broadband identified during other local Horizons activities, staff from WSU Extension Horizons and the WSU Division of Governmental Studies and Services Program for Digital Initiatives (PDI) formed a telecommunications committee in November 2007. The committee expanded to include neighboring Skamania County in 2010 and often has participation of community leaders from across the Columbia River in Oregon.

Linda Williams, WSU Extension Community Coach, leads the telecommunications committee that includes representatives from economic development, telecommunications, nonprofits, education, libraries, local and state government, as well as Horizons participants. “I am not a technology expert,” says Williams, “but like so much of the work we do in Extension, my role is to bring together community members, identify local resources, and tap expertise within the university so we can work together to improve our communities.”

Brian Wanless, Horizon community leader, and one of the founding members of the telecommunications committee explains, “The goal of the committee is to have broadband available to all who want it and at an affordable rate.” Committee efforts focus on three main areas: 1) increased awareness about the relevance of broadband; 2) expanded access to high speed Internet; and 3) community education to increase broadband adoption or use.

The first committee project was to assist Glenwood in securing high-speed Internet. Jay McLaughlin, telecommunications committee member and Executive Director of Mt. Adams Resource Stewards (MARS), a non-profit that addresses concerns Glenwood citizens have about the future of the community, leads the local effort.

In 2008, McLaughlin began mentoring Jimmie Smith, a high school senior who chose a community broadband assessment for his culminating project. Smith worked with McLaughlin and WSU PDI staff to develop a household survey. In the letter accompanying the survey Smith wrote, “The focus of my senior project is to determine how technological advancement, namely improved access to high-speed Internet, could benefit the Glenwood community.” The survey asked critical questions about current Internet access and use, interest in obtaining additional services, and how much residents were willing to pay for these improvements.

Surveys were mailed to all postal box holders in Glenwood and an envelope at the post office served as the collection point. Of the 215 surveys distributed, 77 were returned. Smith and McLaughlin analyzed the data that revealed that 94 percent of the respondents were interested in acquiring new high-speed Internet. Key to building the business case was that almost half of the respondents reported they would pay $40 or more per month for broad-
band (Figure 1). Even so, this did not justify the $1 million initial investment needed for a private telecommunications company to bring broadband to town. McLaughlin shared the results of the Glenwood survey with the telecommunications committee. The high interest from residents and need to continue developing the business case for deployment convinced the committee that a county-wide broadband assessment was necessary. Based on the Glenwood approach, the committee adapted the survey for use throughout Klickitat County. Staff from the Klickitat Public Utility District (PUD) had been actively involved in the telecommunications committee and agreed to provide in-kind support for the project. The PUD included an article about the telecommunications committee and announced the planned survey in the March 2008 issue of Ruralite, a monthly magazine sent to all PUD customers. Surveys were distributed by the PUD in the April utility bills. Completed surveys were returned with customer payments. Approximately 9600 homes received surveys and about 1200 responded.

As a former teacher, committee member Wanless was able to solicit junior and senior high students to help tally surveys. When asked, 52 percent of respondents reported dissatisfaction with current Internet service, with slowness as the top reason. Affordability was
identified as a significant challenge, both the cost of Internet access and computer ownership (Figure 2). The study also identified the need for community education about the relevance of broadband in everyday life and training to help increase computer literacy.

With this valuable data in hand, the announcement about the American Recovery and Reinvestment Act (ARRA) federal stimulus funding for broadband seemed like the perfect opportunity to finally provide Glenwood and other areas in the Columbia Gorge with high-speed Internet service. Brian Adams, the Manager of Sawtooth Technologies, LLC. and long-time telecommunications committee member, agreed to develop a business plan and pursue the funding. According to Adams, “At Sawtooth Technologies we are interested in projects where broadband services have never been deployed.” His local ISP partnered with committee members and NoaNet, a non-profit wholesale telecommunications provider, to submit a U.S. Department of Commerce National Telecommunications and Information Administration (NTIA) Broadband Technology Opportunities Program (BTOP) proposal. In March 2010, an $84.3 million statewide NTIA grant was awarded which included $3.7 million for fiber optic middle-mile in Klickitat and Skamania counties.

At the July 2011 committee meeting, it was announced that broadband would be available in Glenwood in the first quarter of 2012. According to Adams, “As part of the NoaNet project we are placing a new tower with a backbone wireless link to service the Glenwood area which, for the first time, will deliver high-speed Internet and cellular service to the valley.” This was welcome news to committee members. Wanless commented, “When we first started down this path I didn’t think I’d see broadband available in rural parts of this region in my lifetime.” He now believes it is achievable.

Glenwood is well on its way to receiving high-speed Internet but there is still a great deal of work to do. To help people understand the critical role of broadband in the region, the committee held its first workshop entitled “Rural Jobs in the New Economy.” WSU Extension served as the sponsor and it was led by WSU PDI staff. The workshop featured a panel of local business and education leaders presenting information about current broad-

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**Reason for Satisfaction/Dissatisfaction of Internet Service**

- **Unavailable** - 2%
- **Tech Issues** - 2%
- **Unreliable** - 14%
- **Slow** - 65%
- **Good Price** - 1%
- **Only Option** - 1%
- **Reliable** - 4%

Figure 2. Klickitat County, WA Survey Results.
band uses and additional needs. Attendees provided input to the committee about next steps to increase broadband access and adoption.

County Extension leaders are well-positioned to lead broadband efforts. When the committee identifies gaps in its membership, the network of community connections already in place through Extension helps bring the right people to the table. “Because broadband touches so many areas of our lives from social to educational to economical to access to government services, I have found that many of the people and organizations I am already working with either want to be involved or can recommend people to work with us to help increase broadband,” explains Williams.

As needs arise beyond the local area, Williams can count on WSU PDI staff to provide assistance. PDI facilitated involvement of the Washington State Broadband Office (WSBO), the state agency responsible for broadband coordination, programming, outreach, funding, and education. WSBO staff has traveled to participate in committee meetings on several occasions. When asked about the committee efforts, Wilford Saunders, WSBO Broadband Policy and Program Director said this, “Washington is a diverse state geographically and digitally, and it’s often the pragmatic, local focus of a team like the Klickitat-Skamania Telecommunications Committee that bridges gaps in the most effective and cost-efficient way.”

WSBO staff have seen first-hand how this Extension-led local telecommunications committee makes a difference. “During our sessions with the group my team and I have been thrilled to see educators talking with economic development experts, wireless and wireline broadband providers working out the details that have framed a business case and are now building out very contemporary broadband services,” said Saunders.

The committee is also helping the WSBO better understand issues and needs at the local level. Saunders explains, “This telecommunications group has been a key point of reference for the WSBO over the last year and more, providing insights into the challenges of community technology planning and the workability of simple solutions.”

By developing a collaborative, local leadership team; establishing state and federal connections early in the process; identifying the business case based on consumer input; and, incorporating community Extension education as a critical element to increase broadband use, the region is ready to take full advantage of new high-speed Internet investments. County Extension leaders across the U.S. can benefit from the lessons learned by the Klickitat-Skamania Telecommunications Committee. This approach is a solid, replicable model that can benefit rural regions around the country.

And, as for Jimmie Smith, the high school student who three years ago worked on the region’s first broadband effort—he was delighted to learn that his hometown will soon receive broadband and that his work has been an inspiration to others.

“I am not a technology expert,’ says Williams, ‘but like so much of the work we do in Extension, my role is to bring together community members, identify local resources, and tap expertise within the university so we can work together to improve our communities.’”

RECOMMENDED READING
Washington State University Extension Division of Governmental Studies & Services Program for Digital Initiatives
dgss.wsu.edu/Digitinit.html

Communities Connect Broadband Planning Curriculum
srcd.msstate.edu/ecommerce/curricula/
connectingcommunities

Broadband USA
ntia.doc.gov

National Broadband Plan
broadband.gov/plan

U.S. Department of Commerce NTIA State Broadband Data and Development Program
ntia.doc.gov/SBDD

Washington State Broadband Office
broadband.wa.gov

Small Community Broadband
Burning in the Sun

One Man’s Quest to Provide Workable & Affordable Solar Power to the People of Mali

BY KYLEE GEISLER

To learn more about this film, visit: Bullfrogfilms.com
Burning in the Sun, a film produced by Birdgirl Productions and distributed by Bullfrog Films, documents the conditions of Mali, Africa and the development of a renewable energy company created from scratch.

The film takes place in Banko Village and focuses primarily on Daniel Dembélé’s first customers. Dembélé, a twenty-six year old, African entrepreneur, wants to make a difference in his country. The film proficiently showcases the trials of living without electricity and the hardships Banko’s community members face retrieving water. The film explores the difficulties of installing small solar power stations in this rural African community including rooftop solar panel installation to discussions with officials concerning funding.

Ninety-nine percent of the households in Africa’s rural communities do not have electricity and Dembélé’s goal is to bring the necessary resources to them. Dembélé started a local company to build solar panels from an assortment of random pieces. Large gas companies like Shell are selling small parts of the solar equipment that are unusable to them to African communities for an incredibly small amount of money. Thus permitting Daniel to build affordable solar panels for rural communities. His primary objective is to make solar power affordable, and to do this he must accomplish a lot with very little.

As viewers, we are on this roller coaster journey with Dembélé, as he starts out with a very small amount of money and limited knowledge about solar panels. Then the crossroads he faces, and ultimately seeing him transform into a successful businessman.

The filmmakers show a step-by-step process of building the solar panels and the careful attention that is put into each one. Banko village has no electricity and the students use lanterns and firelight to study at night. The first project in Banko consisted of installing lights in the schoolhouse. After the installation, the group of workers took a moment to admire it, and we witness the villagers’ excitement when the lights are turned on for the first time.

The workers then looked outside and explained that fire is the old way to get light and the electric lights in the school are the new way.

The new solar panels also provide electricity for a water pump and the film documents the challenges the villagers’ face each day revolving around the lack of water, and the joy the new water pump brought to the people is immeasurable. Both moments in the village connected the viewers emotionally to their plight and brought a feeling of realness to the events. You get a strong sense of how the new solar panels will benefit everyone in this small rural Mali community.

“Burning in the Sun,” explains that renewable energy is a necessity and the film takes the audience on a progressive voyage to bring affordable solar energy to rural communities. Throughout the film the steady advancement of the project unites the audience and brings great pleasure to the viewer when Dembélé and his crew finish the projects in Banko Village.

The moments of humor eased the mood of the film and softened the worried attitudes. The filmmakers did a wonderful job of showing the personalities of all involved. “Burning in the Sun” was not sugar coated and the scenes are eye opening for viewers and, in this viewer, awakened a desire to be more proactive.

Daniel Dembélé is a brave man and an inspiration to many. His company, Afriqpower, now has a clientele including USAID, Geekcorps, and the U.S. Embassy. The company employs orphans and has moved into manufacturing the photovoltaic (PV) modules for solar power systems, and designing and installing the PV systems.

I would highly recommend this film. “Burning in the Sun” is one of the best documentary films I have seen. The development of affordable solar panels is a revolution not only in Africa but also all over the world as we work to bring basic services, like electricity and water, to the world’s rural communities.

One year after Dembélé installed lights in the school, the percent of students passing their classes increased by 77 percent. This film is both inspiring and uplifting and makes me wonder why we aren’t able to manufacture and install affordable solar panels in this country.

Kylee Geisler is a communications intern with the Western Rural Development Center at Utah State University. She is an undergrad studying Public Relations and Communications.
For information on other RRDC initiatives -- leadership development, regional collaboration, food security and local food systems, community-based disaster management education, youth development, and technology adoption -- visit each Center’s website.

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Building New Economic Opportunities

Increasing economic development success is more likely to be realized when rural counties work in partnership to assess, chart, and implement an action plan that builds on their regional comparative economic strengths and advantages.

The RRDC’s Stronger Economies Together (SET) Initiative does this by delivering 30-plus hours of face-to-face training, and statistical data and technical assistance in partnership with USDA Rural Development and Cooperative Extension. Currently underway in 22 multi-county rural regions located in eight states. SET is expanding to 42 more regions and 20-plus states over the next two years (2011 and 2012).

Providing Entrepreneurs with On-Demand Information and Education

About one in five persons in today’s rural labor force is self-employed and the numbers are continuing to increase. Thanks to the efforts of the Regional Rural Development Centers and a team of Extension Specialists from around the country, entrepreneurs and local leaders have entrepreneurship-related information available 24/7 at: extension.org/entrepreneurship.

Visit us on the Web to learn more: RRDC.INFO

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