The 2005

COLORADO COLLEGE
STATE OF THE ROCKIES REPORT CARD

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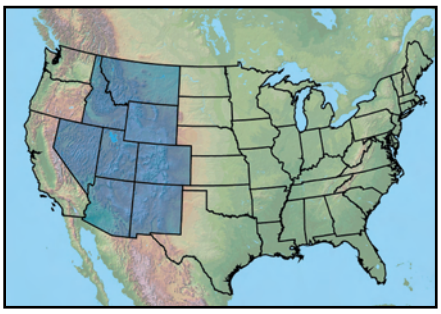
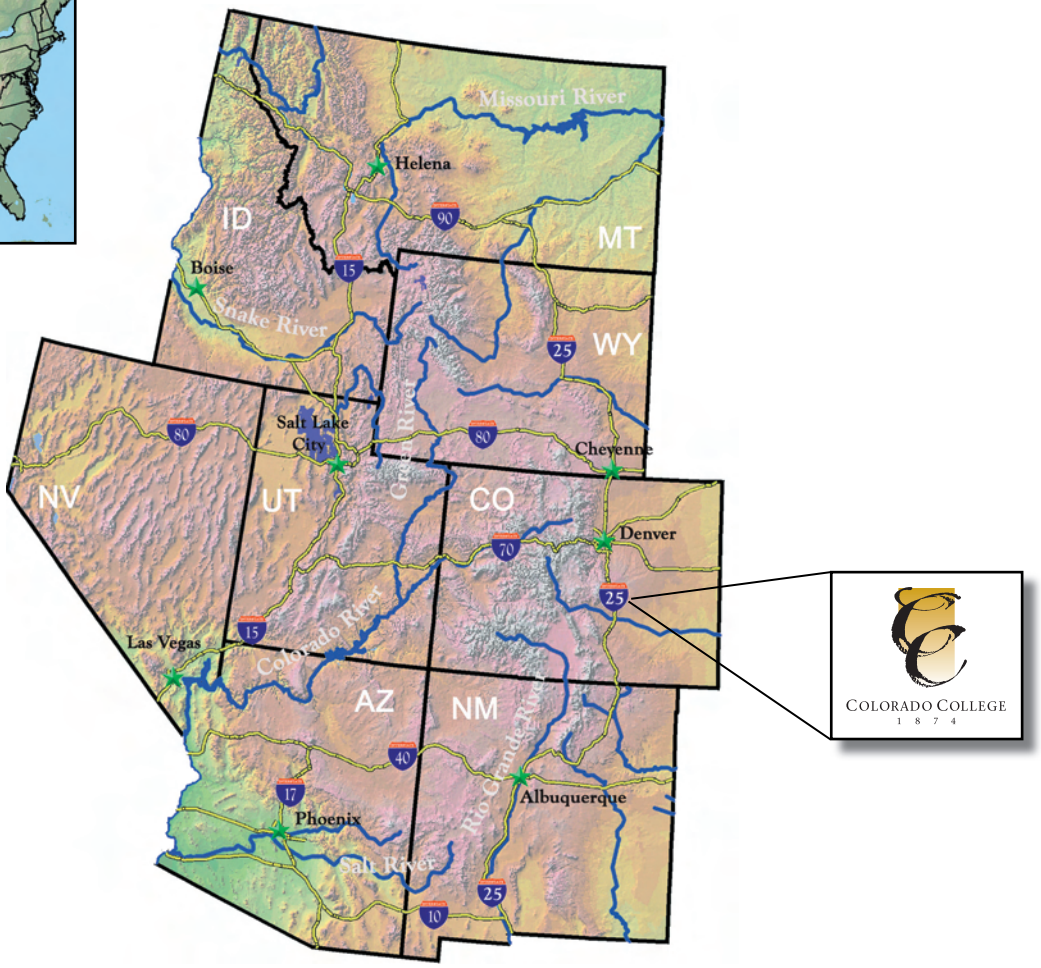
Colorado College's Rocky Mountain Study Region:





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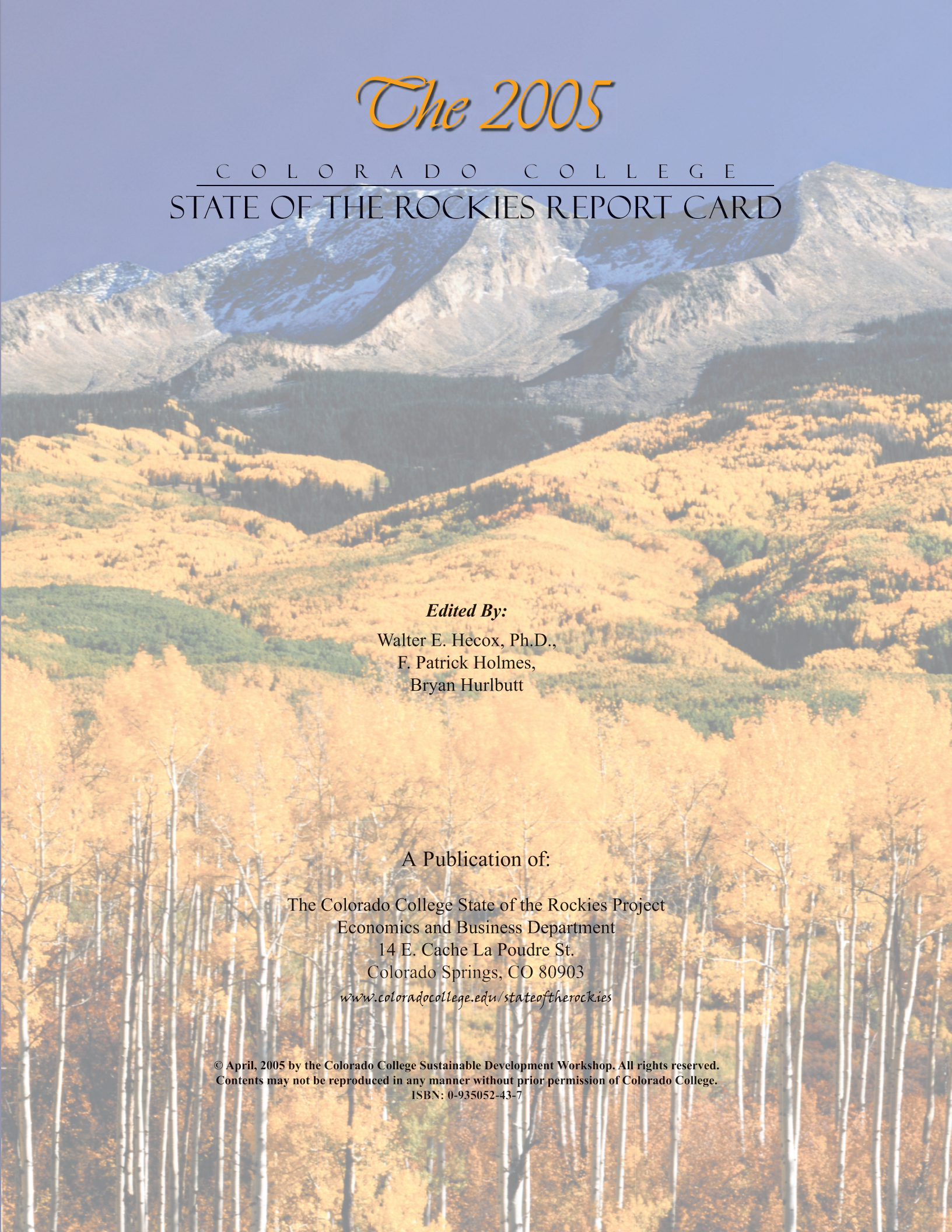
cover photo by Stephen G. Weaver



The 2005

COLORADO COLLEGE

STATE OF THE ROCKIES REPORT CARD

Edited By:

Walter E. Hecox, Ph.D.,
F. Patrick Holmes,
Bryan Hurlbutt

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2005 State of the Rockies Project Acknowledgements

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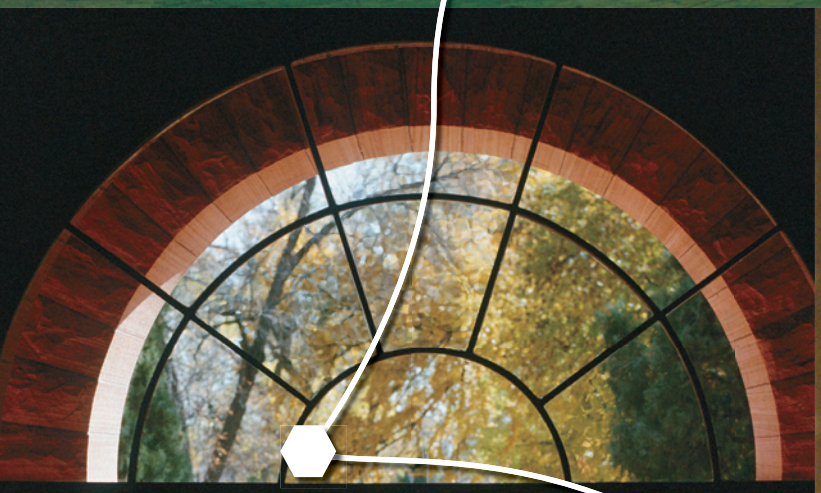
- The Colorado College
- Richard F. Celeste, President of Colorado College
- Michael B. Slade, Colorado College Class of 1979, CC Trustee
- Loewy Family Fund at the Denver Community Foundation
- Pikes Peak Community Foundation
- Anonymous Donors

Overview and Perspective

Grading the Rockies

Connecting With



Colorado College's Commitment to the Rocky Mountains Continues.

Welcome to Colorado College's second annual *State of the Rockies Report Card*. Building upon a strong start in 2004, the Rockies Project in 2005 continues to provide thoughtful analysis of key trends and issues that help define and shape the eight-state Rockies Region. This report card and

Our Backyard

the April 2005 Rockies Conference are significant outreach activities of Colorado College: Vision 2010, an agenda to strengthen our college and our engagement in the region.

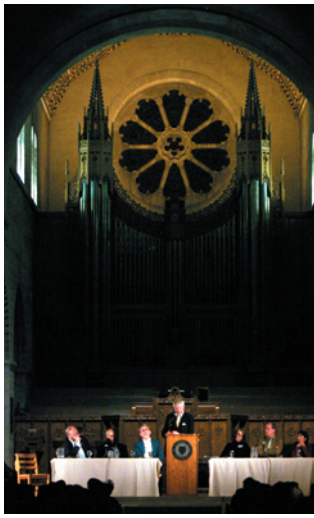
Colorado College has unique connections to our landscape and Rockies neighbors. Since our founding in 1874, we have responded to the constant change in this region of 280 counties with a population that in recent decades has grown at three times the rate of the nation as a whole. A private, four-year liberal arts and sciences college enrolling 1,900 students, Colorado College is located on a 90-acre campus in downtown Colorado Springs near the base of Pikes Peak. What we are about is captured in our new mission statement:

> At Colorado College our goal is to provide the finest liberal arts education in the country. Drawing upon the adventurous spirit of the Rocky Mountain West, we challenge students, one course at a time, to develop those habits of intellect and imagination that will prepare them for learning and leadership throughout their lives.

In pursuit of these objectives Colorado College offers first and foremost an excellent education in the liberal arts and sciences. The college encourages a spirit of intellectual adventure: critical thinking, hands-on learning, and personal responsibility within an environment of small learning communities where education and life intertwine. Increasing student involvement in the Rockies Project is the epitome of this spirit in action!

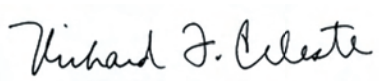
Last year's inaugural State of the Rockies Report Card and Conference successfully charted a new course to engage our students, the community, and the region in meaningful dialogue on regional issues. Off campus, it generated national and state attention, reaching a combined circulation of 2.3 million. News coverage appeared in community newspapers, public radio, television outlets, and in major media including the *Los Angeles Times*, *USA Today*, and the *Albuquerque Journal*. On campus, student-faculty teams collaborated in studying the Rockies. Classroom and textbook theory were linked to Rockies field study and engagement. And students were challenged to sharpen their research and writing skills and actively participate.

This *2005 State of the Rockies Report Card* continues the Rockies Project tradition of identifying, assessing, and communicating key issues and problems in this unique region of spectacular natural beauty and cultural wealth, abundant resources and fragile environment. In these pages you will find thoughtful and often provocative analysis and discussion of some key issues that confront the Rockies: energy, the condition of the national parks, urban sprawl, toxic waste, creative occupations, and civic engagement.



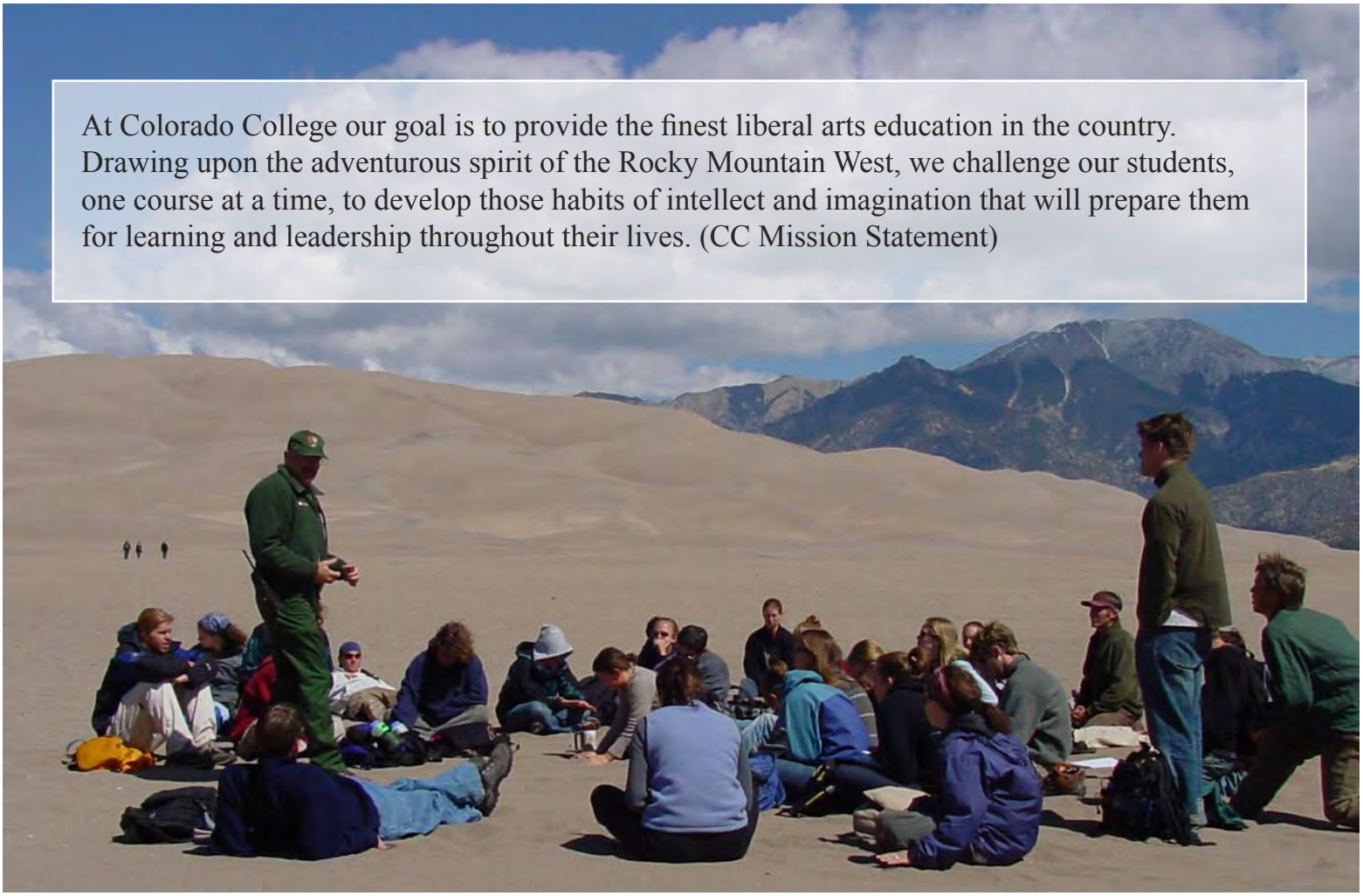
Our second State of the Rockies Conference, April 5-7, 2005, releases the Report Card and celebrates many of the issues it covers with speakers and events. These include Governor Bill Richardson of New Mexico speaking on Rockies energy issues in a national energy strategy; Amory Lovins of the Rocky Mountain Institute, relating national energy strategy and conservation to the Rockies; Patricia Limerick, director of the Center of the American West in Boulder, Colorado; and Terry Anderson, executive director of the Property and Environment Research Center in Bozeman, Montana, each presenting "challenge essays" about the region; David Lester, executive director of the Denver-based Council of Energy Resource Tribes, and Jacqueline Johnson, executive director National Congress of American Indians, addressing Native American Sovereignty; and author Terry Tempest Williams, sponsored by the English department, drawing from her new work: "Ground Truthing: The Open Space of Democracy."

Once again this year I invite you to explore the Rockies through the material in this *Report Card* and trust that it will inform, challenge, and stimulate you. Above all, I welcome you to a growing network of individuals and institutions linked together through common appreciation of the Rockies as a stellar region worth contemplating, nurturing, and protecting in the coming decades.



Richard F. Celeste
President of Colorado College

Colorado College and the Rocky Mountains



At Colorado College our goal is to provide the finest liberal arts education in the country. Drawing upon the adventurous spirit of the Rocky Mountain West, we challenge our students, one course at a time, to develop those habits of intellect and imagination that will prepare them for learning and leadership throughout their lives. (CC Mission Statement)

Colorado College today, as for the past 130 years, is strongly defined by location and events of the 1800s. Pike's Peak abruptly rises out of the high plains that extend from the Mississippi and Missouri Rivers towards the west. This eastern-most sentinel of the Rocky Mountain chain of 14,000 ft. peaks first attracted early explorers and then was the focus of President Jefferson's call for the southern portion of the Louisiana Purchase to be mapped by Zebulon Pike in 1806. Gold seekers in 1858 spawned the start of the "Pike's Peak or Bust Gold Rush" of prospectors and all manner of suppliers to the mining towns. General William Jackson Palmer, while extending a rail line from Kansas City to Denver in 1869, camped near what is now Colorado City and fell in love with the view of Pike's Peak and red rock formations now called the Garden of the Gods. An entrepreneur and adventurer, he selected that site to found a new town with the dream that it would be a famous resort –complete with a college to bring education and culture to the region. Within five years both Colorado Springs and Colorado College came into being in Colorado Territory, preceding Colorado statehood in 1876.

Early pictures of present day Cutler Hall, the first permanent building on campus that was completed in 1882, speak volumes to the magnificent scenery of Pike's Peak and the lonely plains. Katherine Lee Bates added an indelible image of the region. In 1893 she spent a summer teaching in Colorado Springs at a CC summer program and on a trip up Pike's Peak was inspired to write her "America the Beautiful" poem. It helped spread a celebration of the magnificent vistas and grandeur of Pike's Peak and the surrounding region -- and provided bragging rights for CC as "The America the Beautiful College."

The last quarter of the eighteenth century was challenging both for Colorado Springs and Colorado College. Attempts to locate financial support in the east and ease the travails of a struggling college were grounded on the unique role of Colorado College in then President Tenney's "New West" that encompassed the general Rocky Mountain region. His promotion of this small college spoke of Colorado College being on the "very verge of the frontier" with a mission to bring education and culture to a rugged land. Even then,

Tenney saw the college as an ideal place to study anthropology and archeology, use the geology of the region as a natural laboratory, and serve the mining industry by teaching the science of mineralogy and metallurgy. In the early 1900s a School of Engineering was established that offered degrees in electrical, mining and civil engineering. General Palmer gave the college 13,000 acres of forest land at the top of Ute Pass, upon which a forestry school was built, the fifth forestry school created in the US and the only one with a private forest.

Subsequent decades brought expansion of the college, wider recognition as a liberal arts college of regional and national distinction, and creation of innovative courses, majors, and programs. The unique Block Plan, implemented in the 1970s, consists of one-at-a-time courses facilitating extended course field study, ranging across the Rockies and throughout the Southwest. Thus CC has a rich history indelibly linked to the Rockies.

Today is no different: CC has new programs that meet evolving challenges in the Rockies, including environmental science and Southwest studies programs, a sustainable development workshop, and exciting field work offered by a variety of disciplines. Students can thoroughly explore the Rockies through the Block Plan.

The Rockies Project:

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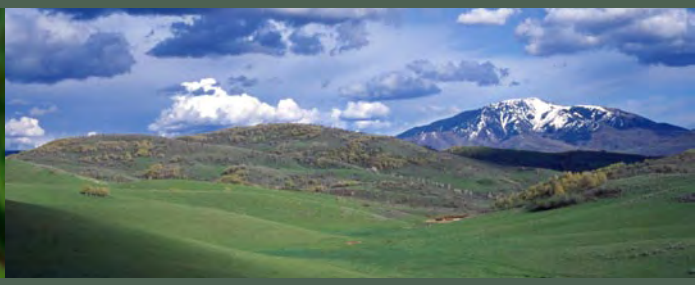
Colorado College Special Collections



Editors' Preface

We do not believe in a "sophomore slump!" In this our second year of the Rockies Project, we have moved beyond the 2004 State of the Rockies Report Card's assessment of 14 county-based indicators related to: land and environment; social and cultural capital; income, employment and equity; as well as an overall "GPA" for each county based upon vibrancy and vitality. Perhaps in future years we will return to some of those measures of what is happening in the 280 counties comprising the 8-state Colorado College Rockies Region.

In this year's 2005 Report Card we have retained the approach of "grading," but are applying it to different entities in the Rockies besides counties, including national park units, energy-rich areas, toxically challenged regions, and communities with creative occupations.

Major work has been devoted to undertaking original analysis and discussion to illuminate dimensions of the Rockies we consider important, interesting, and central to the health of this spectacular but fragile part of the US. A "Rockies Baseline" section is introduced for the first time to track vital signs that depict a region in transition; we intend to present similar baseline information in future Report Cards, appropriately updated to show changing trends and magnitudes.

We have held onto the tradition of assigning an overall "GPA" to each county throughout the Rockies, this year in the area of civic engagement and capacity, both components of social capital. We have few illusions regarding "grading": communities earning a high grade will be pleased, while communities graded low will howl with protest! In the ensuing discussion and debate, much good arises as people within the Rockies start to converse about "their" region, acting for brief periods like citizens of the Rockies.

Future years will bring new topics, different analysis, more discussion and dialogue. Central to each year's activities are the three aims of the Colorado College State of the Rockies Project:

- Student involvement in analysis, writing and delivery,
- A written Report Card that is packed with valuable information and provocative discussion,
- An annual State of the Rockies Conference at Colorado College.

The overall project goal: involve undergraduate college students to learn about the complexities of the Rockies, to help create the Report Card and to help conduct the State of the Rockies Conference. Further objectives: encourage conference attendees and Report Card readers to engage with experts, stretch their minds, ponder what is required to protect and promote a region whose future requires engaged citizens, careful management, and dynamic change to reinvent -- again and again -- a region of explorers, settlers, entrepreneurs, and residents.

Executive Summary

Responding to 2004 Rockies Challenges:
"Reflections on Inland Colony Status and Regional Sovereignty"
Matthew Lee-Ashley, 2004/05 Visiting Researcher, Colorado College State of the Rockies Project.

Heard once or twice, perhaps an accident; heard repeatedly, a message becomes important! During the 2004 Rockies Conference and in the 2004 Report Card, a number of experts harped on the questions: do the Rockies lack "sovereignty" and is the area for all intents and purposes an "inland colony" of the nation? This "response" to challenges made last year first identifies the specifics of such charges. It characterizes the region's large proportion of federal land holdings/management, aridity and rural nature; moves to investigate further what experts say about sovereignty and "colony" status; and ends with examples where the Rockies Region and its people and communities are asserting their independence in demanding an equal voice as major issues are decided about energy, environment, and growth.

"Rockies Baseline: Vital Signs for a Region in Transition"
Walter E. Hecox, Project Director, F. Patrick Holmes, 2004/05 Program Coordinator and Bryan Hurlbutt, 2004/05 Project Researcher, Colorado College State of the Rockies Project.

Vital signs for an area as immense as the 8-state Rockies Region are important if we are to measure each year magnitudes of population, employment and income, as well as rates of change and comparisons to US trends and averages. Starting with this 2005 Rockies Report Card we intend each year to provide information in tables, companion charts and graphs that highlights key dimensions to what is happening in the Rockies. To be updated in each future Rockies Report Card, these vital signs will help readers navigate through the complexities of US Census data on population and housing as well as other data on employment and income.

2005 State of the Rockies Challenge Essay:
"From the Old West to the New West and Back Again"
Terry Anderson, Executive Director, Property and Environment Research Center, Bozeman, Montana

Terry Anderson, renowned for his work on "free market environmentalism," challenges readers with an intriguing discussion of the historic roots of Rockies development and resource extraction, transition to amenity-based economies and societies that bring with them rampant conflict and indecision, and finally the prospect for

a return to some "Old West" attributes of local, community-based cooperation and increasing use of markets to make tough decisions. The "Old West" is sketched out as an era when commodity demands and development dominated, a rapacious frontier existed, and development forces ran rough shod over people and natural resources. The "New West" has become increasingly oriented towards amenity demands to use the land for recreation and tourism rather than extract resources from the same lands. Conflicts abound as newcomers butt heads with established tradition and old-timers. Resolution of these conflicts, argues Anderson, will come increasingly from a modern adaptation of some "old" practices and institutions so that resources and their modern uses can be more easily exchanged through markets and power is devolved to lower levels of decision makers.

"The Role of Law in the Toxic Legacy in the Rockies"
Phillip M. Kannan, Distinguished Lecturer and Legal-Scholar-in-Residence, Colorado College.

The opening of the Rockies in the nineteenth century was facilitated by how law was used to expand land use rather than protect its associated environmental characteristics. For decades economic development and a pushing back of the frontier was paramount, with few laws protecting the environment. This has been true for water, minerals, timber and grazing. Federal uses of the Rockies to promote private ownership of the lands and extractive uses of the public lands were supplemented during the twentieth century by large-scale military reservations in the region. Starting roughly in the 1970s, society has strengthened the legal forces protecting the environment through landmark legislation. There are nascent forces at work seeking further alignment of federal laws with increased amenity use of the area's resources and new individual and community ideas about how federal resources should be managed and protected.

Sketches of Regional Management Issues in the Rockies:

"San Luis Valley, Colorado: A New National Park"
Christine Renner, 2004/05 Student Researcher, Colorado College State of the Rockies Project.

National park status is a "premier" form of land protection, reserved for the most stunning natural lands and systems in the Rockies. Expansion of the Great Sand Dunes National Monument into a national park with expanded acreage and boundaries redefined along ecological lines has just been consummated by Congressional appropriation to purchase the private Baca Ranch. Massive amounts of ground water in the San Luis Valley have motivated several major efforts to pump water from the aquifer for "export" to thirsty cities. Efforts by locals and state officials, largely motivated by a desire to block water export, have resulted in Colorado's newest national park. The potential economic impacts on the surrounding communities and counties, when combined with the protection for ground water, relate a fascinating tale of politics driven to use national park status creatively.

"San Juan Mountains: Reshaping the Region for the Twenty-First Century"
F. Patrick Holmes, 2004/05 Program Coordinator, Colorado College State of the Rockies Project.

What does an entire mountain chain and its incumbent region do when forces eliminate traditional economic ways of life? The San Juans in southwestern Colorado and Silverton, Colorado, epitomize the struggles facing a region and community when mining and other natural resource extraction activities such as timber and grazing sink into insignificance as economic "drivers" of a region's economy. Amenities now predominate in much of the Rockies, with recreation and tourism demanding "enjoyment" services from public lands instead of extractive activities from the same lands. Rapid population growth in the region brings in thousands of newcomers with different sources of income and wealth, political perspectives, and amenity values. How the San Juans region seeks to reshape its future is described in this example that is being repeated throughout the Rockies.

"West Yellowstone, Montana: A Captive Gateway Community"
– Bryan Hurlbutt, 2004/05 Project Researcher, Colorado College State of the Rockies Project.

The Rockies is largely defined by spectacular natural beauty, often with the most stellar lands owned and managed by the federal government. Gateway communities exist adjacent to many of these areas, providing locals and visitors alike with services and facilities. Wild variations in the public's access to federal lands as management priorities change can devastate these communities, creating seasonal and even prolonged dips in visitation and economic activity. West Yellowstone, Montana's experience in recent years with variations in Yellowstone National Park snowmobile management is summarized as a quintessential example of both the symbiosis that exists between federal lands and their adjacent communities and the frustrations that arise. Lessons from "West" are applicable to many other communities around the Rockies.

"National Parks Under Stress"
F. Patrick Holmes, 2004/05 Program Coordinator and Bryan Hurlbutt, 2004/05 Project Researcher, Colorado College State of the Rockies Project.

How healthy are our national parks? Critics charge that they are languishing, with dilapidated buildings, trails, and roads to the tune of billions of dollars. Supporters argue that the Bush Administration has a plan to eliminate the deferred maintenance backlog by devoting $5 billion during the second term. The Rockies Project has tackled the task of gathering data, some through a Freedom of Information Act request, to assess all 70 National Park Service units in the Rockies on visitation, funding, capital assets, accumulated maintenance backlog, and projected budget allocations through federal fiscal year 2009. Each park unit has been graded on its current and projected ability to reduce/eliminate deferred maintenance under Bush Administration plans. While parks are making progress on human infrastructure, little information and less funding exists to assess and protect cultural resources. The Rockies needs to advocate for and protect against erosion of the "crown jewels" of the region's vast public estate.

"Energy Use/Development Patterns in the Rockies"
Chase Whitney, 2004/05 Visiting Researcher, Colorado College State of the Rockies Project, Bryan Hurlbutt, 2004/05 Project Researcher, and F. Patrick Holmes, 2004/05 Program Coordinator.

Are the Rockies a huge welcome mat for visitors, or does the rest of the nation wipe its collective feet on the region? Vast energy resources denote the region and comprise an important part of its economy. Fierce debate rages over a national energy plan and what role the Rockies should play alongside of or instead of energy conservation. Three national energy strategies are reviewed to demonstrate the dramatic differences in what the Rockies may be called upon to provide for the nation in resources extracted and refined/processed, with incumbent waste and pollution alongside lucrative jobs and community growth. Our analysis measures the location and magnitude of energy resources throughout the Rockies, both non-renewable and renewable. Critical regions and communities both sit on top of vast energy wealth and potential; and at the same time are in line to bear the benefits and brunt of the impacts. How, where and when the Rockies makes its "fair" contribution to a national energy strategy will largely determine the future of the region.

"The Toxic Rockies"
Bryan Hurlbutt, 2004/05 Project Researcher, with assistance from Caitlin O'Brady, 2004/05 Student Researcher, Colorado College State of the Rockies Project.

Where, when and why are toxic substances being generated and disposed within the Rockies? Picking up a challenge from the 2004 Rockies Conference, we have gathered data on toxic generation and release throughout the region. Federal facilities in the Rockies are an important source of toxic legacy and even continuing toxic generation and release. Communities and businesses compound the amounts of toxic chemicals in the Rockies. Using measures such as the EPA's Toxic Release Inventory and other analyses of pollution, the pattern of toxics has been analyzed for each of 280 counties. We have identified the most toxic counties based upon air, water and land, with a final "overall" rank assigned for a composite measure of toxicity within the Rockies.

"Rockies Sprawl Index"
F. Patrick Holmes, 2004/05 Program Coordinator, Colorado College State of the Rockies Project.

Is beauty and functionality in the eye of the beholder? Sprawl to some is an unfortunate consequence of cheap land and energy and rapid growth surrounding urban areas. To others the lifestyle and incumbent housing, commercial and transportation patterns developing throughout the Rockies epitomize market forces providing individuals with inexpensive housing and livable communities far away from urban cores with their pollution, crime, and congestion. The State of the Rockies Project has measured sprawl in metropolitan Rockies communities. Five metrics have been used to develop an index of sprawl, using computer-based mapping analysis (GIS). Two groups of metropolitan statistical areas as defined by the Census Bureau have been ranked separately: communities with populations above and below 50,000 people. Governance and "costs of sprawl" have also been visited to conclude this analysis of what Rockies citizens are doing to their built-environments.

"Native American Tribes Regaining Sovereignty: Success Cases"
Professor Walter Hecox, Rockies Project Director, Rebecca Schild, 2004/05 Student Researcher and Chase Whitney, 2004/05 Visiting Researcher, Colorado College State of the Rockies Project.

Charles Wilkinson, law professor at the University of Colorado and eloquent writer of many books on the American West, spoke at the 2004 State of the Rockies Conference on "Endurance and sovereignty among the Indian Nations of the Rocky Mountain West." Taking up his challenge, the State of the Rockies Project has sought examples in the Rocky Mountain region of Native American Nations that are creative and energetic in strengthening "sovereignty" over their lives, communities, and resources. We have written a number of capsule sketches of these "success stories" throughout the Rockies, spread among tribes, and covering initiatives in education, community services, and resource protection/development. The fabric woven by these case studies is consistent with Wilkinson's observation of a year ago: "Tribal governments now are clearly the real governments in Indian Country."

"Creative Occupations Patterns"
F. Patrick Holmes, 2004/05 Program Coordinator

Much is being made around the nation about "the creative class." Analysis by Richard Florida in his book *The Rise of the Creative Class* suggests emergence of a new socio-economic and demographic group that is posited to be the new driver of economic productivity, affluence and ingenuity in "with-it" communities. Florida challenged the State of the Rockies Project to seek out "emerging areas of indigenous culture on the fringe." Analysis of the larger metropolitan areas in the Rockies reveal three top central cities on our "creativity" scale, with smaller neighboring areas out-competing their core centers. Beyond the reach of Richard Florida's analysis lie scores of non-metropolitan communities: how do they rate and rank? Our analysis extends Florida's concept within the Rockies, adding measures of protected lands, amenity-ratings, and a new "charismatic mega-fauna" index, each of the latter investigating the pull of nature for creative people. Results show strong associations between stellar natural conditions in and around flourishing creative economies and communities.

"Civic Engagement and Capacity"
2005 Rockies Final Overall GPA:
Chase Whitney, 2004/05 Visiting Researcher and Matthew Lee-Ashley, 2004/05 Visiting Researcher, Colorado College State of the Rockies Project.

Do cowboys bowl alone? Robert Putnam's *Bowling Alone* suggests American society has turned inward, asocial, less engaged. The State of the Rockies Project set out to measure dimensions of civic capacity and engagement in search of an answer for the Rocky Mountain Region. Measures range from charity to health, literacy, political as well as religious involvement. Communities of roughly like-kind/size are compared to each other. Finally a measure of "social capital" provided each community a type of overall GPA. Top 10 communities are identified for civic capacity, civic engagement, and overall social capital. A companion table provides data and grades for each county in the Rockies where data supports assigning grades. Selected profiles of "civic" success stories show that the Rockies Region is engaged in strengthening "civics" as a fundamental determinant of healthy, well-functioning communities.




Reflections on Inland Colony Status and Regional Sovereignty

By Matthew Lee-Ashley

For over a century, folktales, literature, and movies have celebrated the independent spirit of the American West. From Billy the Kid to "Buffalo Bill" Cody, the heroes of Western lore are rugged mavericks in an unforgiving land. Though the government has at times intervened to impose order, self-reliance – not dependency – characterizes the Western experience. Westerners have always, and will always, do things their way.

But last year, at the first annual State of the Rockies Conference at Colorado College, the speakers and writers agreed: the Rocky Mountain Region is not the independent land of our imagination; it is an inland colony of the United States. Without control of the land, politics, and economy, Westerners do not dictate the region's destiny. Ed Marston, former editor of *High Country News*, wrote in the 2004 Challenge Essay: "We live as Southerners did during Reconstruction, occupied by an often federal force, and for many of the same dismal reasons." Because we have so far proven ourselves to be inadequate stewards of the region's vast public land holdings, the rest of the country does not trust us with sovereignty. "And," added Marston, "they are right." [1]

In the face of dwindling resources, we still have not swerved from the Western ethic of unchecked growth, said former Colorado Governor Richard Lamm in his keynote address last April. "…Even though the West is no longer young and unsettled, we're still acting as if it were." Assuming that our water and resources are limitless, we proceed as we did in the 19th century, with growth speeding along at full tilt. "Ladies and gentlemen," concluded Governor Lamm, "we need some brakes." [2]

Western legal scholar Charles Wilkinson shared Marston's and Lamm's concerns about regional sovereignty but argued that native peoples in the Rockies have, in fact, restored powers of self-governance over the past half-century. Since the early 1950s, when the federal government passed legislation to sell off Indian lands, native peoples in the West have wrested much decision-making authority away from the Bureau of Indian Affairs. "Over the past two generations the tribes have achieved dramatic successes," said Wilkinson, "heartwarming successes and historic ones. Tribal governments now are clearly the real governments in Indian Country." [3]

Though Wilkinson expressed hope for the future of Native American sovereignty, the debate over the appropriate role of the federal government in local affairs is as contentious on Indian lands as it is elsewhere in the West. This debate over regional sovereignty and Native American sovereignty, so well framed by Wilkinson, Marston, Lamm, and others in the 2004 State of the Rockies Conference and Report Card, poses a serious threat to our assumptions about Western independence. The language of dependency and colonialism challenges our Western identity, our perception of history, our political rhetoric, and our view of the outside world. Perhaps in the context of the daily struggles in our local communities, discussions of sovereignty seem myopic, provincial, and petty. But from the regional perspective, we focus more easily on the concerns that last year's State of the Rockies speakers and authors raised. Are the eight states in the Rockies Region truly an "inland colony?" What are the facts that we might all agree upon? How do perspectives on these facts emerge? How might we create a more informed dialogue on sovereignty and colony status in a region that covers vast distances and holds few apparent binding ties? These are some of the questions we hope to answer in this year's conference and report card.

How we approach the problem of regional sovereignty depends in part on how we define the region. From a purely statistical perspective, the Rockies Region contains eight states, 863,242 square miles, 24% of the nation's landmass, and 6.5% of the nation's people. Most of its residents live in urban areas, only 1.4% of the land is developed, and the 119% population growth in the past 30 years outpaces the rest of the country by a factor of three. The population is slightly younger, more mobile, and more educated than elsewhere. Two percent walk to work.

The numbers, of course, don't begin to describe the region's landscape. As anyone who has driven from Montana to Nevada knows, the Rockies' states may be connected, but there is little consistency in the vistas. A massive mountain range chops the region in the middle, deserts and high plains spread it at the edges, icy winds batter it in the north, and the sun scorches it in the south.

Despite the region's great geographic variety, two attributes of the land are common. The first is the region's low popu-

lation density of 0.52 people per square mile. The "open quarter" myth still holds.

The second common attribute of Western lands, championed by adventurer John Wesley Powell for its influence on all aspects of Western development, is aridity. In his reports to Congress in the 1870s and 1880s, Powell insisted that the scarcity of water in Western lands would influence all aspects of development; it would dictate settlement patterns, demand the investment of tax dollars for storage and diversion, and require creative political solutions to ensure efficient use.[4] Powell's assessment was largely correct. With many of the eight states receiving less than 20 inches of rainfall per year, the climate has not easily accommodated the region's mobile population.

Though water issues have permeated many layers of public life, several other aspects of the natural world consistently provoke controversy. Because so many Western lands are publicly owned, debates over energy, timber, ranching, pests, and toxic wastes are at the forefront of public policy concerns. In 2003, the federal government owned 46% of the land in the Rockies, meaning that every logging permit, every wilderness protection, and every acre leased has the potential to incite conflict.

Public ownership of lands is at the center of the debate over regional sovereignty. The massive federal land base gives the government extraordinary political power in sparsely populated areas. Farmers, ranchers, Native American nations, mining and timber companies, ski resorts and many others largely watch passively as professional resource managers within the federal government craft policies to suit the needs of "their" lands. Though locals consistently complain of being powerless to make decisions in their own communities, they do not often ask that federal subsidies be halted. From construction contracts through the Bureau of Reclamation to Homeland Security contracts and Department of Defense expenditures, the Rockies simply rely too much on the federal budget to be fully independent.

Historians differ on the role of federal subsidies in the development of the American West. Revisionist historian Patricia Nelson Limerick argues that federal support was essential to all stages of Western development. "The two frontier activities – the control of Indians and the distribution of land – were primarily federal responsibilities, at times involving considerable expense." As tax money flowed west with federal projects and contracts, the government assumed a paternalistic role. "Even apparent inaction could in a way support development," says Limerick. "Failing to restrain or regulate access to the public grazing lands or to the timber lands, the federal government in effect subsidized private cattle raisers and loggers with unlimited access to national resources." [5]

The federal government's economic legacy in the West is still strong. From defense contracts to oil and gas leases, Washington's pen can lift communities to boom or leave them to bust. Subsidies to rail transportation and water projects have coaxed outside capital into the region, allowing extractive industries like mining and timber to find a profit even in the most remote regions. While government investment in infrastructure has increased the region's productive capabilities, say historians Michael Malone and Richard Etulain, "the region's exploitative economy, dedicated overwhelmingly to the production of unfinished natural products, doomed it to a roller-coaster cycle of booms and busts and a lingering 'colonial' relationship to the financial and industrial capitals of the East." A "victim of its own riches," the West owes patronage both to the federal government and outside investors. [6]

In contrast to Limerick, who emphasizes Western dependence over independence, economic historian and free marketer Terry L. Anderson – author of this year's Challenge Essay – insists that the government entered the frontier only after settlers had already established their own institutions. Cooperation among individuals, not dependency on government subsidies, drove efficient Western development to the benefit of small entrepreneurs. "However, as the state and national governments began to take over the role of rule makers, the calculus changed since individuals bore fewer costs from conflict and reaped fewer benefits from cooperation. If you could get a standing army paid from the national treasury to take land from Indians, or if you could get the federal government to subsidize uneconomic irrigation projects, you would do so regardless of the net benefits to society." [7] While Limerick argues that federal subsidies were essential to Western development, Anderson sees government involvement as burdensome to it.

Despite differing opinions on the degree and timing of federal intervention on the frontier, the consequence of such a long-standing federal dependence on local leadership is clear. Daniel Kemmis, former minority leader and speaker of the Montana House, describes an atomized, self-serving political landscape in the West. Because Washington D.C. makes the final decision on so many land-use questions, citizens and elected officials are accustomed to lobbying their own case to the government, rather than working with other groups to find a solution. Kemmis claims that for this reason the federal bureaucracy has served as an "escape valve" for Westerners, "shielding them from the necessity of direct, face-to-face (republican) problem-solving." [8] Deference to federal power has left the Rockies politically

immature, ill prepared to make difficult choices.

Not surprisingly, Westerners have not always been consistent in their opposition to centralized control over public lands. Depending on how far an interested group trusts local citizens to use "their" resources wisely it may or may not call for tighter federal oversight. The national environmental movement has perhaps been the most visible in calling for more extensive supervision of public lands in the Rockies. In pushing national parks, roadless areas, and endangered species protection, environmentalists have asked for a heightened level of federal control, often to the chagrin of rural communities with high unemployment rates. The West's national treasures are simply too valuable, says environmental historian Donald Worster, for rural areas to be burdened with the full responsibility for their protection: "There must be a continuing federal role in the West to safeguard what local people cannot safeguard effectively, and it needs to allow far more people – urban people – to share in the commonwealth idea." [9]

Pat Ford, former director of the Idaho Conservation League, agrees with Worster that federal withdrawal from the West poses dangers. Describing the consequences of deregulating telephone service in Idaho, Ford argues that the withdrawal of federal technological support from rural areas will lead to a "balkanization" of the West. Citizens, left behind in a free-market communications grid, become atomized when they lose access to resources that they have always shared. [10]

Environmentalists, of course, are not the only ones who occasionally ask for more federal involvement. (And they often ask for less: consider, for example, the response of Nevada anti-waste activists to Yucca Mountain storage proposals.) Agricultural interests, energy companies, and recreational users have asked for subsidies to deliver water or to build a highway. Those who one day call for regional sovereignty plead for federal regulation the next. Hypocrisy is never in short supply.

But aside from the daily rhetoric maligning government bureaucrats or the local water board, there have long been conversations about a fundamental overhaul of political structures in the West. John Wesley Powell may have been the first to envision a radical reorganization of Western democracy when he proposed ceding sovereignty over public lands to the people in each watershed. In 1889 he told the Montana Constitutional Convention: "…I believe that the primary unity of organization in the lands should be the drainage basin which would practically have a county organization, if you please, with county courts, etc. – I need not enter into the details – then that the government of the United States should cede all of the lands of that drainage basin to the people who live in that basin.(Applause.)" [11] Powell imagined that political divisions based on drainage basins would serve to ensure an efficient use of resources and kindle a strong republicanism among citizens. With close connection to the land and to each other, Westerners would live in a healthy frontier democracy.

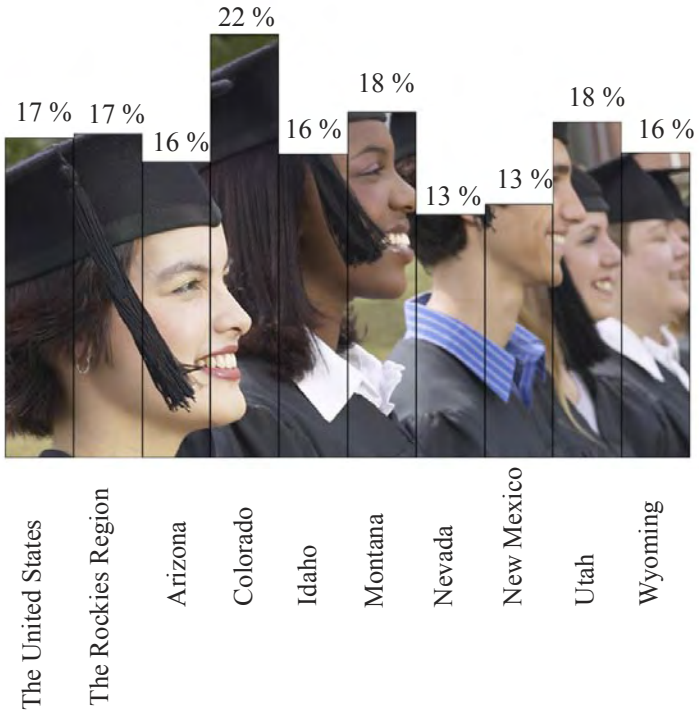
Though Powell's vision is untenable today – the layers of law and government are too thick to allow such reorganization – the type of civic engagement he imagined for the West may hint to the solution to our problem of sovereignty. Powell, like Thomas Jefferson, believed that the foundation of a healthy democracy lay in the ability of its citizens to come together in pursuit of the common good. If an educated, engaged public can find consensus on pressing issues, the community and the nation benefit.

Historically, we in the West have not lived up to the tenets of Jeffersonian republicanism. In public meetings, says Daniel Kemmis, we speak not to each other, but to the federal officials who make the decisions. Rather than discussing the common good, we promote our individual needs, eager to gain a favorable verdict. Predictably, the loudest voices (and deepest pockets) usually prevail.

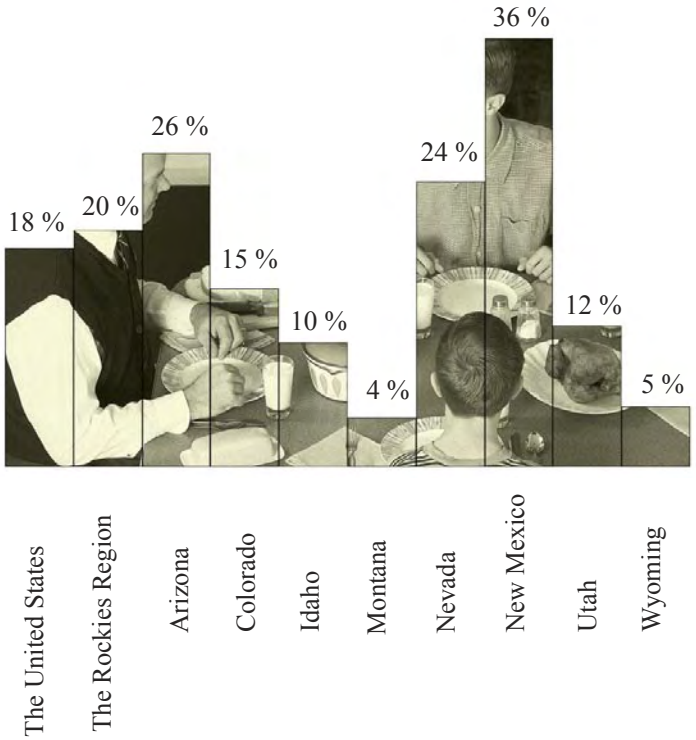
There are signs of hope, however. Across the West, people are conducting a wide range of experiments in consensual politics. Ranchers, environmentalists, military leaders, and developers are using conservation easements to protect watersheds and open space; rural counties, metropolitan utilities, Native American nations, farmers, and recreational users are brokering water deals that address the region's long-term needs; and student activists are joining with politicians and energy companies to expand the availability of renewable energy to consumers. Though some of these projects may eventually fail, the willingness of Westerners to assume that risk together suggests that the spirit of cooperation and the "missing middle" of Western politics are reemerging. It may also signal that Westerners are reengaging in the public life of their communities and their region. If this is true, the Rockies are well on their way to more responsible governance.

People		United States	Rockies Region	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming
Population & Age	2000 Total Pop. (millions)	281.4	18.2	5.13	4.30	1.29	0.902	2.00	1.82	2.23	0.494
	2003 Total Pop. % Change from 2000	1%	4%	7%	3%	3%	-1%	10%	1%	3%	-1%
	2003 Pop. Age 0-19	28%	30%	30%	28%	31%	27%	29%	30%	35%	27%
	2003 Pop. Age 65+	12%	11%	13%	9%	11%	13%	11%	12%	9%	12%
	2003 Median Age	36	33.9	33.9	34.5	34	39	35.1	35.6	27.7	38
Households	2000 Family	68%	68%	68%	65%	72%	66%	66%	69%	76%	67%
	2003 Family	68%	68%	68%	66%	72%	65%	64%	68%	76%	67%
	2000 Non-family	32%	32%	32%	35%	29%	34%	34%	31%	24%	33%
	2003 Non-family	33%	32%	32%	34%	28%	35%	36%	32%	24%	33%
	2003 Average Family Size	3.19	3.17	3.21	2.98	3.13	2.99	3.26	3.20	3.55	2.98
Race 2003	White	78%	84%	79%	86%	93%	92%	81%	72%	92%	95%
	Black or African American	13%	3%	4%	5%	1%	0%	7%	2%	2%	1%
	Native American	1%	4%	6%	2%	2%	8%	2%	10%	1%	3%
	Hispanic or Latino (any race)	14%	21%	28%	19%	8%	2%	22%	43%	10%	7%
Education 2003	Pop. 3+ in Grades 1-8	44%	44%	45%	43%	44%	44%	47%	44%	40%	43%
	Pop. 25+ Graduated High School (or equivalent)	30%	27%	26%	24%	30%	33%	32%	27%	26%	33%
	Pop. 25+, Bachelor's Degree	17%	17%	16%	22%	16%	18%	13%	13%	18%	16%
	Pop. 25+, Graduate or Professional Degree	10%	9%	9%	12%	8%	8%	7%	10%	9%	8%
Other 2003	Pop. 5+, Same House a Year Ago	85%	82%	80%	82%	81%	86%	82%	83%	82%	82%
	Pop. 5+, Different House a Year Ago	15%	18%	19%	18%	18%	14%	18%	16%	17%	17%
	Pop. 5+ Speak English Only in Home	82%	80%	74%	85%	90%	96%	76%	64%	88%	95%
	Pop. 5+ Language other than English	18%	20%	26%	15%	10%	4%	24%	36%	12%	5%
	Worked at Home	3%	4%	3%	6%	5%	6%	3%	5%	4%	5%
	Mean Minutes Travel Time to Work	24	21	23	23	20	17	22	19	20	18

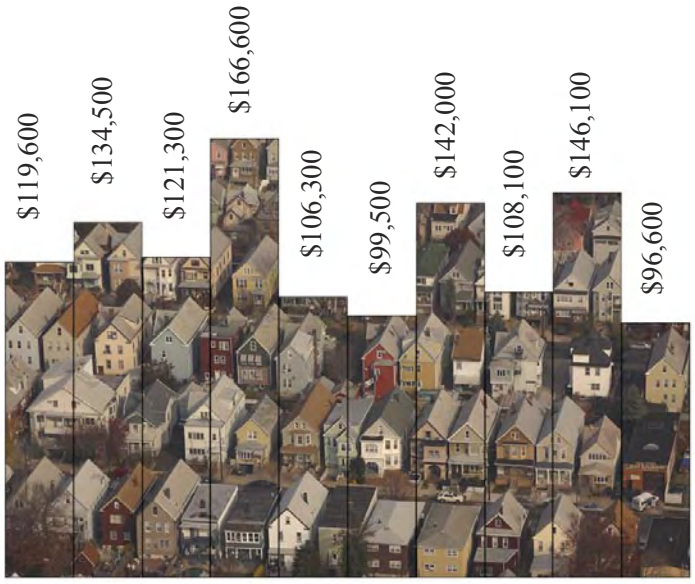
Percent of Population Age 25+ with a Bachelor's Degree or Higher, 2003



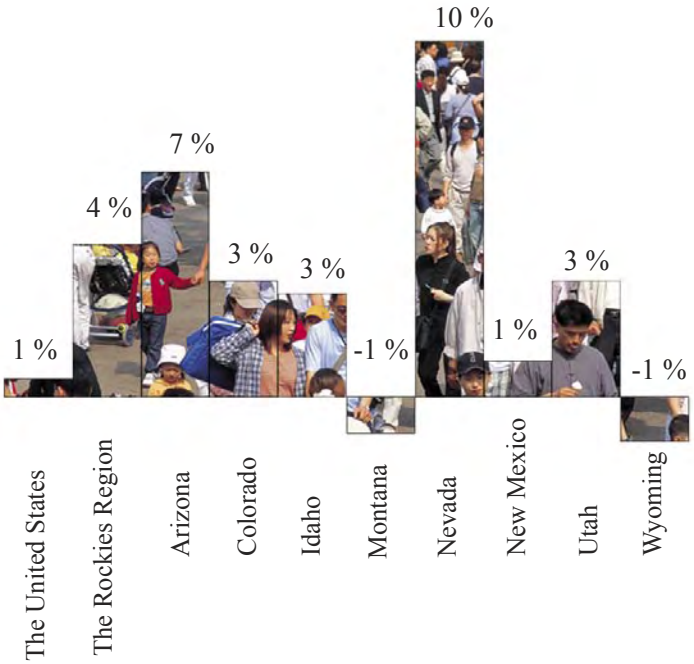
Percent of Population Age 5+ Speaking a Language Other Than English at Home, 2003



Median Home Value, 2000



Population Growth, 2000 - 2003

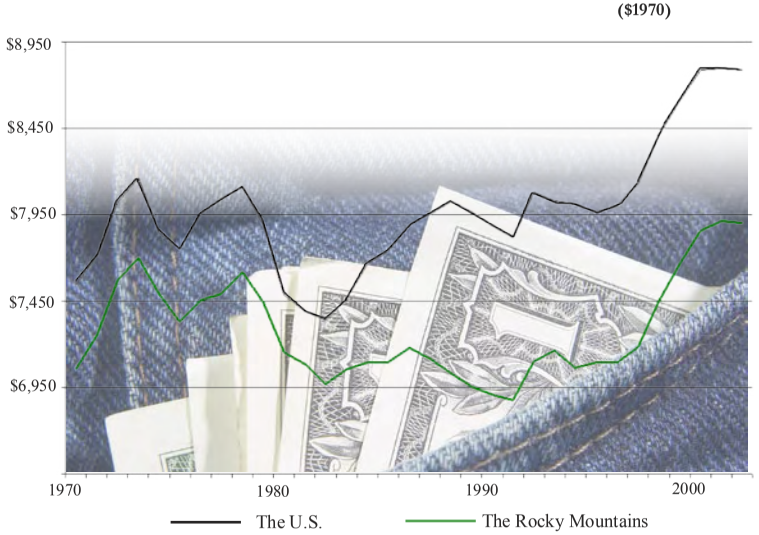


Housing		United States	Rockies Region	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming
Units	2000 Owner-occupied	66%	68%	68%	67%	72%	69%	61%	70%	72%	70%
	2003 Owner-occupied	67%	69%	68%	70%	74%	69%	62%	69%	73%	72%
	2000 Renter-occupied	34%	32%	32%	33%	28%	31%	39%	30%	29%	30%
	2003 Renter-occupied	33%	31%	32%	30%	26%	31%	38%	31%	27%	28%
Size 2003	Average Owner-occupied	2.72	2.65	2.74	2.54	2.71	2.50	2.76	2.75	3.22	2.52
	Average Renter-occupied	2.39	2.41	2.52	2.21	2.49	2.32	2.46	2.36	2.65	2.28
Value	2000 Median	$119,600	$134,500	$121,300	$166,600	$106,300	$99,500	$142,000	$108,100	$146,100	$96,600
	2003 Median % Change from 2000	23%	18%	20%	26%	11%	19%	20%	10%	7%	20%
Monthly Costs	2000 Median Mortgaged	$1,088	$1,073	$1,039	$1,197	$887	$863	$1,190	$929	$1,102	$825
	2003 Median Mortgaged % Change from 2000	11%	8%	10%	13%	3%	10%	7%	4%	6%	12%
	2000 Median Not Mortgaged	$295	$259	$268	$277	$236	$261	$294	$228	$249	$229
	2003 Median Not Mortgaged % Change from 2000	13%	9%	6%	6%	9%	7%	13%	0%	10%	9%
Rent	2000 Median	$602	$611	$619	$671	$515	$447	$699	$503	$597	$437
	2003 Median % Change from 2000	13%	8%	7%	12%	10%	13%	10%	4%	6%	13%

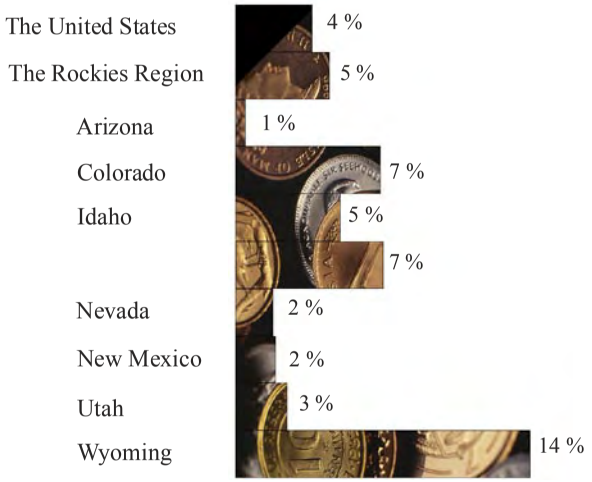
2003 Employment		United States		Rockies Region		Arizona		Colorado		Idaho		Montana		Nevada		New Mexico		Utah		Wyoming	
Occupation	Management, Professional, & Related	45,215,214	34%	3,012,045	34%	809,116	34%	868,335	38%	203,525	32%	155,198	35%	277,054	27%	276,261	34%	347,741	33%	74,815	29%
	Service	21,351,389	16%	1,569,148	18%	427,402	18%	338,830	15%	107,825	17%	84,570	19%	264,572	25%	153,490	19%	145,591	14%	46,868	18%
	Sales & Office	34,752,972	26%	2,356,915	26%	648,525	27%	596,790	26%	150,201	24%	109,802	24%	274,127	26%	196,700	24%	321,793	30%	58,977	23%
	Farming, Fishing, & Forestry	935,847	1%	76,684	1%	17,679	1%	9,438	0%	17,669	3%	7,821	2%	4,992	0%	13,132	2%	3,243	0%	2,710	1%
	Construction, Extraction, & Maintenance	12,612,711	10%	984,766	11%	264,104	11%	236,198	10%	68,936	11%	44,907	10%	127,770	12%	88,774	11%	113,502	11%	40,575	16%
	Production, Transport, & Material Moving	17,554,254	13%	911,237	10%	233,391	10%	221,562	10%	80,226	13%	46,306	10%	94,680	9%	75,666	9%	129,314	12%	30,092	12%
Industry	Agriculture, Forestry, Fishing & Hunting, & Mining	2,338,703	2%	251,341	3%	32,506	1%	46,964	2%	33,471	5%	34,505	8%	20,866	2%	44,086	5%	12,190	1%	26,753	11%
	Construction	9,591,021	7%	795,354	9%	211,746	9%	209,827	9%	54,650	9%	36,113	8%	110,940	11%	62,937	8%	85,759	8%	23,382	9%
	Manufacturing	16,302,557	12%	713,770	8%	205,504	9%	194,149	9%	75,322	12%	22,949	5%	49,608	5%	39,640	5%	116,194	11%	10,404	4%
	Wholesale Trade	4,938,833	4%	296,308	3%	75,338	3%	85,401	4%	22,451	4%	13,254	3%	26,807	3%	27,749	3%	38,610	4%	6,698	3%
	Retail Trade	15,356,518	12%	1,082,965	12%	304,601	13%	268,567	12%	69,054	11%	55,683	12%	110,816	11%	98,111	12%	144,320	14%	31,813	13%
	Transportation & Warehousing, & Utilities	6,666,049	5%	405,976	5%	107,073	4%	101,962	4%	24,458	4%	23,023	5%	49,588	5%	29,676	4%	54,217	5%	15,979	6%
	Information	3,466,754	3%	242,118	3%	59,452	2%	87,465	4%	11,538	2%	7,268	2%	23,003	2%	16,378	2%	31,169	3%	5,845	2%
	Finance, Insurance, Real Estate, Rental, & Leasing	9,441,454	7%	627,828	7%	202,613	8%	173,066	8%	30,640	5%	25,296	6%	70,422	7%	39,626	5%	74,874	7%	11,291	4%
	Professional, Science, Management, & Admin. Svcs.	12,870,057	10%	914,940	10%	239,315	10%	276,442	12%	58,845	9%	32,958	7%	109,673	11%	77,869	10%	105,758	10%	14,080	6%
	Educational, Health, & Social Services	27,292,718	21%	1,689,212	19%	464,090	19%	421,819	19%	133,040	21%	97,962	22%	135,104	13%	180,869	22%	206,592	19%	49,736	20%
	Arts, Entertainment, Rec., Accommodation, & Food Svcs.	11,070,816	8%	988,217	11%	245,386	10%	188,729	8%	49,935	8%	51,685	12%	252,165	24%	89,231	11%	84,950	8%	26,136	10%
	Other Services (except public administration)	6,484,803	5%	414,212	5%	112,084	5%	116,220	5%	29,437	5%	22,122	5%	35,482	3%	36,701	5%	49,079	5%	13,087	5%
	Public Administration	6,602,104	5%	488,554	5%	140,509	6%	100,542	4%	35,541	6%	25,786	6%	48,721	5%	61,150	8%	57,472	5%	18,833	7%
Worker Class	Private Wage and Salary	102,579,670	77%	6,799,133	76%	1,863,918	78%	1,771,377	78%	441,844	70%	305,676	68%	849,650	81%	555,793	69%	834,531	79%	176,344	69%
	Government	20,098,282	15%	1,421,643	16%	379,011	16%	309,895	14%	120,277	19%	83,618	19%	133,049	13%	177,775	22%	163,383	15%	54,635	22%
	Self-employed in Own, Not Incorporated, Business	9,361,640	7%	662,931	7%	149,442	6%	185,564	8%	63,679	10%	56,009	12%	59,235	6%	67,680	8%	59,425	6%	21,897	9%
	Unpaid Family	382,795	0%	27,088	0%	7,846	0%	4,317	0%	2,582	0%	3,301	1%	1,261	0%	2,775	0%	3,845	0%	1,161	0%

Rockies Region Occupations, 2003

Real (adjusted for inflation) Average Earnings Per Job, 1970 - 2002



Percent Growth in Median Household Income, 2000-2003



Income & Poverty		United States	Rockies Region	Arizona	Colorado	Idaho	Montana	Nevada	New Mexico	Utah	Wyoming
Income	2000 Median Household	$41,994	$41,554	$40,558	$47,203	$37,572	$33,024	$44,581	$34,133	$45,726	$37,892
	2003 Median House. % Change from 2000	4%	5%	1%	7%	5%	7%	2%	2%	3%	14%
	2000 House. Mean	$56,604	$52,843	$52,835	$59,313	$46,344	$40,290	$55,463	$43,895	$54,973	$45,363
	2003 House. Mean % Change from 2000	5%	5%	4%	7%	7%	7%	6%	4%	2%	13%
	2003 House. Mean with Social Security	$12,651	$12,700	$13,464	$11,899	$12,799	$12,329	$12,961	$11,386	$13,305	$13,212
	2003 House. Mean with Supplemental Security	$6,731	$7,000	$6,813	$7,515	$8,088	$6,597	$6,505	$6,671	$6,859	$6,187
	2003 House. Mean with Public Assistance	$3,084	$2,367	$1,894	$2,661	$1,567	$4,069	$2,732	$2,171	$2,241	$3,531
	2000 House. Mean Retirement	$17,376	$18,131	$18,248	$19,342	$15,786	$15,132	$18,656	$18,539	$17,682	$16,270
	2003 House. Mean Retire % Change from 2000	-2%	-0%	-0%	-3%	-4%	4%	-4%	5%	5%	-3%
	2000 Median Family	$50,046	$48,350	$46,723	$55,883	$43,490	$40,487	$50,849	$39,425	$51,022	$45,685
	2003 Median Family % Change from 2000	4%	5%	1%	6%	8%	10%	3%	6%	3%	13%
	2000 Per Capita	$21,587	$20,439	$20,275	$24,049	$17,841	$17,151	$21,989	$17,261	$18,185	$19,134
	2003 Per Capita % Change from 2000	7%	6%	3%	9%	5%	11%	4%	6%	4%	15%
2003 Poverty	Families	9%	9%	10%	6%	8%	11%	8%	14%	7%	8%
	Individuals	12%	12%	14%	9%	12%	15%	11%	18%	9%	11%
	Individuals 18+	11%	11%	12%	9%	11%	13%	9%	16%	9%	10%
	Individuals 65+	10%	8%	8%	7%	8%	9%	7%	13%	6%	9%
	Individuals with Children Age 0-17	16%	15%	19%	11%	14%	18%	14%	25%	10%	14%



From the Old West to the New West and Back Again

By Terry L. Anderson

The "New West" means many things to different people, but for the economist and policy maker it is best thought of in terms of increased amenity demands on the region's natural resource base. In recent years the demand for amenities produced from the air, water, and land has increased relative to the demand for commodities produced from those same resources. For example, residents in the West today are less willing to tradeoff using air or water for waste disposal against having cleaner air or water for consumption or recreation. Residents prefer more open space to urban sprawl or more recreational opportunities on public lands to clear cuts. Sometimes amenity demands are couched in terms of ecosystems and biodiversity, but regardless of the terms used to describe them, they are human demands articulated by human beings.

In contrast to the New West, the "Old West" is a term used to refer to an era when and a region where commodity demands dominated. The Old West was a rapacious frontier where cowboys, miners, loggers, farmers, and railroad tycoons ran rough shod over people and natural resources with little concern for the amenity production possibilities from air, water, or land. In that world, rich people got richer at the expense of the environment. The "Old West" is illustrated by many of the original state nick names—Montana the Treasure State, Idaho the Gem State, Wyoming the Cowboy State, Washington the Evergreen State, and California the Golden State. The transition from the Old West to the New West is exemplified by Montana's switch from using its original nickname, the Treasure State, to its new one, Big Sky Country.

In the New West the increase in amenity demands relative to commodity demands has brought with it new competition for resources. In some cases amenity demands and commodity demands can be complementary while others necessarily require a substitution of resources between uses. The difference between complementary and substitution is captured in the Montana Land Reliance's bumper sticker, which reads "Cows Not Condos." In other words, keeping land in agricultural production is complementary with the amenity value the Montana Land Reliance wishes to maintain while converting agricultural land into housing developments is not. Where there is complementary use of resources, different demands can be met without sacrifice, but where substitution is required, competition for resources requires sacrifices or, in the vernacular of economists, opportunity costs.

Terry L. Anderson is Executive Director of PERC

This raises two basic questions which are addressed in this paper: How will the competing demands be resolved and will the institutions that resolve competing demands for resources promote cooperation or conflict? The first section of the paper describes the Old West as an era when competition for resources resulted in the evolution of private property rights and laid the basis for resource markets and gains from trade. The second section describes a transition from the Old West to the New West where institutions, driven mainly by a political process, generate conflict rather than cooperation. The third section argues that a return to the "good old days of yesteryear" could displace some of the conflict that permeates resource use in the West and replace it with more cooperation, whether through markets or more community-based local institutions.

The Not So Wild, Wild West

"Dime novels" and western movies give us images of the frontier West as a "wild and woolly" frontier where cowboys shot Indians, gunslingers routinely shot one another and innocent bystanders, big cattle ranchers fought sheepherders, and, to use Mark Twain's words, "whiskey was for drinkin' and water was for fightin'." Such depictions are not all wrong. The Indian Wars were a shameful part of western history that resulted when the standing army, created during the Civil War, found itself looking for skirmishes to fight (see Anderson and McChesney 1994). Fist fights did occur at the local "watering holes," and people did get shot in barroom brawls (McGrath 1984). Cattlemen did fight with sheepherders when the latter brought sheep into areas where cattlemen had customary grazing rights (see Anderson and Hill 2004; Libecap 1981).

Because water was the lifeblood of agriculture in the arid West, farmers and ranchers battled to establish claims (see Anderson and Snyder 1995).

Such romantic and exciting stories, however, miss the important ways in which people on the frontier hammered out the institutions necessary for peaceful and productive settlement. Explanations for why this happened flow from what has come to be known as the "new institutional economics." [1] The theory suggests that, because resource endowments in the West were so different from those in the East, necessity became the mother of institutional invention and innovation. Like any production process using scarce resources, people economize. In the case of defending and enforcing property rights, Demsetz (1967) and Anderson and Hill (1975) argue that people will only establish property rights when the value of the property to be defended rises sufficiently to offset the cost of defense. Because fighting over property rights is a negative-sum game, people with a stake in the game have an incentive to bargain to settle disputes (see Cooter and Rubinfeld 1989). In some cases, raiding was substituted for trading, but this generally happened when the power of the national government could be used to redistribute rights either by using its military might as in the case of the Indian Wars [2] or by using its taxing powers as in the case of water development under the Reclamation Act.

A few examples capture why the Old West was not so wild and how local institutional innovations provided incentives for resource stewardship. At the heart of most property rights was the notion that "first possession" was a cost-effective mechanism for establishing ownership.[3] From California to Montana, miners established claims rather peacefully through the rules of the mining camps (see Umbeck 1977). Because the six-shooter made nearly everyone equal in the use of force and because each claim had about the same productivity, miners honored first-possession claims that were of equal size. Similarly, the prior appropriation doctrine for water rights was hammered out in the mining camps and agricultural valleys and remains the basis for water law throughout the American West.

On the grazing frontier, efforts to define and enforce property rights built to a crescendo when hundreds of miles of barbed wire fences were built, but initially property rights to land were much less formal. As pressure on grazing resources increased with the arrival of cattle herds from Texas, grazers established property rights to land by simply posting notice on signs or in local newspapers that a grazer had claimed land. For example, on April 12, 1884, Charles S. Johnston posted a claim in the *Glendive Times* (in Glendive, Montana) that he did "hereby notify the public that I claim the valley, branching off the Glendive Creek, four miles east of Allard, and extending to its source on the South side of the Northern Pacific Railroad as a stock range." [4]

Though customary range rights were informal, they were sufficiently well enforced that they had significant value when traded in the marketplace. Enforcement came mainly from the cattlemen's associations that functioned as a local government. Historian Ernest Staples Osgood (1929, 115) summarized the three aims of the associations: "first, to preserve the individual's ownership in his herd and his

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increase; second, to afford protection to the individual's herd; and third, to control the grazing of the public domain or to prevent over-crowding. These aims, which might have been achieved by an individual in the earlier days of comparative isolation, could now only be realized through group effort." Bi-annual roundups provided a way of excluding grazers who were not members of the associations and hence not allowed to graze in the region. The roundups entailed scale economies which could be achieved by working together. If a grazer could not participate in the roundup, he could not efficiently enforce his rights to his cattle.

This brief summary of "the not so wild, wild west" suggests that local people are capable of hammering out local institutions that can allocate resources across competing demands. At the time property rights were evolving on the western frontier, the resource demands were mainly for commodities such as cattle, logs, crops, and minerals. Not only did the property institutions provide security of ownership that got the incentives right for encouraging efficient resource use, they allowed transferability between uses. The prior appropriation doctrine is an especially good example of a property rights system that has survived the test of time and promoted water transfers from one diversion use to another. The recent work by Gary Libecap (2005) debunking myths about the Owens Valley water transfers to Los Angeles provides even more evidence of how the property rights to water and land, devised in many cases prior to the arrival of formal government, remain effective today in encouraging efficiency and cooperation. The problem is that restrictions on transferability coupled with political allocations have replaced positive-sum games, where the gains from trade encourage cooperation, with zero-sum games where transfers from one party to another result in conflict.

The Frontier Moves to Washington

On the frontier prior to the arrival of formal governmental institutions, the actors were, what economists call, residual claimants. That is, it was their resources at stake in developing institutions thus giving them an incentive to conserve on how many resources were used in establishing property rights. As Lueck (2003) points out, the rule of first possession, as in the case of water rights, was one way of reducing the cost of defin-

ing and enforcing property rights. Though first possession can create a race to be the first possessor, as it did in the case of the homestead acts, local institutional development discouraged racing and minimized the effort that had to be put into retaining property rights. [5]

The arrival of formal government, however, removed the constraint of residual claimancy by separating the costs and benefits of decisions. The farther governmental decisions are removed from local constituencies, the more likely it is that interest groups will shift the costs to others while capturing the benefits for themselves. These benefits are referred to as rents by economists because they are returns above and beyond the opportunity costs of obtaining them. Thus the act of manipulating the political system to acquire these benefits is called rent seeking. In essence, rent seeking is the act of redistributing valuable assets from one party to another using the coercive power of government to effect the transfer.

Of course, not all governmental activities involve transfers and rent seeking. Government can play a positive role in institutional development by reducing the costs of defining, enforcing, and trading property rights. It also can lower the cost of using collective action to overcome the free-rider problem inherent in the production of public goods. Examples of lowering the cost of establishing property rights abound. Once cattlemen on the frontier had established branding as a way of identifying their cattle, they turned to territorial and state governments to register and enforce their brands. This lowered the transaction costs for the cattle market. The rectangular survey more clearly specified boundaries of land rights, and court houses provided the locus of registering the deeds associated with those boundaries. Today state governments are adjudicating water rights that evolved before formal governments existed. In Montana, for example, a water court has been working for years to determine priority dates and quantities for all the basins in Montana. Once this costly process is completed, it will be much easier for market trades to occur.

The homestead acts provide an example of a property institution that defined and enforced private ownership of land, but at significant costs caused by the race to claim those rights that the acts encouraged. By requiring settlement to secure title to land, homesteaders had to be "sooners," to take a term from Oklahoma's land rush history. In many cases this meant "premature" settlement and failure to prove up on the homestead (see Anderson and Hill 1990). Though private ownership did result, it was fragmented into parcels that were too small for economic viability and came at significant costs in terms of premature settlement and expenditures on unnecessary improvements.

The allotment of Indian lands is another example of how the federal government's attempt to establish private property rights opened the door for rent seeking. With the Dawes Act of 1887, Congress authorized allotment of small parcels of reservation land to individual Indians to be held in trust by the government until the Indians were deemed "competent" to hold clear title. Not only were these parcels too small for economic viability, the trust status made them unuseable as collateral for loans and placed bureaucratic impediments in the way of owner management. The rent-seeking aspect of allotment came in the fact that once reservation lands were allotted, the remainder of reservations were declared "surplus" and opened for non-Indian homesteading. In the end, non-Indians ended up with significant portions of some reservations, and the trust lands were not put to very productive uses. [6]

In setting aside millions of acres as public lands, the federal government opened another door for rent seeking through bureaucracies such as the Forest Service, the National Park Service, and the Bureau of Land Management. Today these agencies control nearly one-third of the land in the United States and as much as 90 percent of the land in states such as Nevada and Alaska. Though referred to as public lands, they are better thought of as "political lands," the rents from which are allocated through political and bureaucratic processes. Scientific and multiple-use management may play a role in the allocation of these resources, but ultimately it is politics that carries the day.

When the political lands were first restricted from privatization, management was much less centralized and even bordered on privatization in the sense that specific individuals or groups were the residual claimants. Indeed, in the case of national parks, there was de facto ownership during the early years when nearly everyone of the early, large western parks was controlled by railroads in one way or another. Yellowstone National Park offers a perfect example. [7] There, the Northern Pacific recognized the value of the park's amenities to its passenger traffic. With homesteaders trying to establish claims to the most unique places such as Mammoth Hot Springs and Old Faithful, the railroad realized that some of the potential rents would go to these homesteaders if they were successful. With a virtual monopoly on transportation to Yellowstone but with no way to establish private ownership for itself, the Northern Pacific lobbied Congress to set aside the area as a national park and therefore not open to homesteading. Once privatization was stopped, the railroad proceeded to obtain monopoly control of internal services such as stagecoach transportation, lodging, and meals. These monopolies, combined with its route from Chicago, gave the railroad virtual ownership and provided the incentive to preserve the amenities. As one official put it,

> We do not want to see the Falls of the Yellowstone driving the looms of a cotton factory, or the great geysers boiling pork for some gigantic packinghouse, but in all the native majesty and grandeur in which they appear today, without, as yet, a single trace of adornment which is desecration, that improvement which is equivalent to ruin, or that utilization which means utter destruction. (Runte 1990, 23)

When the arrival of other railroads to Yellowstone coupled with the allowance of automobiles into the park in 1916 broke the Northern Pacific's virtual monopoly, the management vacuum was filled by the National Park Service. During its early years, the National Park Service took in enough revenue to fully cover its costs and then some. Parks were seen more as playgrounds where people could camp, sightsee, fish, and generally recreate, and these uses did not compete with one another. Politics entered the picture mainly through concession contracts.

In more recent years, however, the National Park Service has become more of a political football as different demands have interpreted the service's charge of maintaining parks "unimpaired for the enjoyment of future generations." Does this mean more wilderness areas? Does it mean fewer campgrounds? Does it mean allowing snowmobiles? Does it mean reintroducing species such as wolves? And the list goes on. Each of these questions represents a competing demand and requires the National Park Service to reallocate the resources under its charge. Not surprisingly, nearly all of its decisions are challenged in court.

The U.S. Forest Service and the Bureau of Land Management provide similar stories. Gifford Pinchot, whose idea the Forest Service was, envisioned an agency that would scientifically manage the public lands to maximize timber production according to the German model in which he was trained. With this single purpose, the agency essentially had only one constituency, loggers, to which it had to respond, and the agency's mission was consistent with its constituency's. When grazing was added as a commodity to be produced on Forest Service lands, there was not conflict between logging and grazing constituencies because the two outputs were complementary to one another; more clearcuts meant more grass. [8]

Especially since World War II as incomes have increased, Forest Service lands have become a recreational playground and a bureaucratic battleground. Even within the recreational community, there are conflicts over use. For all-terrain-vehicle users or snowmobilers, old logging roads provide excellent trails. Hence logging and offroading or snowmobiling can be complements to one another. On the other hand, logging and vehicular traffic usually are not viewed as compatible land uses for hikers, skiers, and general wilderness afficionados. To charge the Forest Service with balancing these demands, Congress passed the Multiple Use Act of 1964 and to constrain land agencies in the way they carried out their management, it passed the Federal Land Policy and Management Act in 1976. Neither of these acts, however, provided a blueprint for trading off one use against another in any positive-sum way; rather they legislated bureaucratic processes that pit one user group against another in zero-sum games. This rent-seeking boxing ring produces "multiple conflicts over multiple uses" (see Anderson 1994).

The Bureau of Land Management (BLM) has a similar history. Originally the agency managed grazing lands that were not productive enough to warrant homesteading. Local grazing districts run by committees of local grazers acted as residual claimants. With good local knowledge of forage, rainfall, and other variables that affected grazing, these local districts effectively maximized the value of the grazing output. Because these lands were less attractive for recreation than the national forests, there were few conflicting demands for land, making the goals of the BLM and its constituents congruent.

In recent years, pressures on the BLM have followed the path of the Forest Service. Amenity demanders have battled to reduce grazing in the interest of increasing wilderness, wildlife, and recreation. Economist Gary Libecap (1981, 93) concludes that between 1960 and 1980, "ranchers lost much of the security of tenure and decision-making power . . . . The beneficiaries of the shift have been the Bureau of Land Management and its conservationist supporters." And again the result has been "multiple conflicts over multiple uses."

Perhaps the best (or perhaps more appropriately, the worst) example of rent seeking comes with western water. The Reclamation Act of 1902 was aimed at "making the desert bloom like a rose." By building dams and delivery systems, the federal government supplanted private irrigation development (see Anderson and Hill 2004) with massive subsidies to farmers (see Rucker and Fishback 1983). As long as the reclamation projects were primarily for irrigation and secondarily for hydro-electric production, conflicts over water management were few. The Bureau of Reclamation had contracts to deliver water to farmers with little concern for instream consequences.

The Klamath River debacle in Oregon epitomizes the changes that have resulted from conflicting demands for water.[9] Backed by the Endangered Species Act, environmentalists demanded that water be left in the river for threatened or endangered fish species. Tribes, armed with treaties giving them hunting and fishing rights, joined the fight to reallocate Klamath River water from irrigation to instream flows. When the Bureau of Reclamation shut off water to the farmers in the spring of 2001, an estimated 13,000 farmers and their friends defied the federal government by forming a bucket brigade to symbolically dump water into the bone-dry "A" Canal. The conflicts are not so severe when there is enough water to meet all demands, but when drought conditions set in, as they did in 2001, conflict follows. The question becomes who has the right to whatever water there is—farmers who have prior appropriation water rights or contracts for water delivery from the Bureau of Reclamation, Indian tribes who have treaty rights for fishing and hunting, or environmentalists who claim water for fish species under the Endangered Species Act? It is that question that has farmers, environmentalists, tribespeople, and government agencies locked in a battle, not just in the Klamath, but on many streams and rivers throughout the West.

Back to the Future

In contrast to the property-based institutions that evolved on the western frontier, the political institutions that evolved during the twentieth century were not designed to accommodate changing values. With private property rights to land, water, and minerals, people could exchange their property rights to accommodate different values and promote efficiency. To be sure, the primary values that were accounted for in these market transactions were commodity values, though the story of Yellowstone and of dude ranching suggests that amenities were not totally ignored.[10] In contrast, political institutions

for managing land, water, and wildlife generally can only reallocate resources by substituting one use for another. As a result, federal agencies and even some state agencies find themselves locked in political or court battles over virtually every decision they make. The question is: Can we learn from our past to improve the future of the West?

The key to institutional reform that can promote cooperation is to devolve decision making to levels where the actors have a greater stake in the outcome. On the frontier, the people hammering out property institutions had a clear stake in the process and the end result. Fighting is a negative-sum game because resources are expended in redistributing valuable assets. Residual claimants not only have better knowledge about the values of the resources at stake, they have an incentive to find gains from trade. Without going to the extreme of full privatization of all resources, consider some devolution possibilities for land, water, and wildlife that could encourage positive-sum games.

Land

As economist Robert Nelson (1996) has noted, political land management has created private rights to public lands. For example, grazers on federal lands have had relatively secure property rights to their grazing permits, and these secure rights have given them an incentive to be good stewards. Environmentalists, who would prefer not getting cow manure in their waffle stompers, tried to get the Clinton administration to remove grazing from the federal estate using slogans such as "No Moo in '92" and "Cattle Free in '93." [11]

One simple solution to this problem is to make existing permits transferable to non-grazers on a willing buyer-willing seller basis. This approach is exemplified by the efforts of the Grand Canyon Trust and the Conservation Fund to purchase the Kane and Two Mile ranches in Utah between the Grand Canyon and the Grand Staircase-Escalante National Monument. These two groups are trying to raise $4.5 million. With that, they will acquire 1,000 acres of private land and the associated grazing permits for 900,000 acres of public land. According to Bill Hedden, executive director of the Grand Canyon Trust,

> We don't pretend that we can just march in and manage the land better than anyone else. But our goals are different than traditional ranchers. We can manage to improve the habitat for antelope fawn survival or to ensure that there is an adequate small mammal prey base for goshawks and spotted owls. . . . We need new ways to do things, and this private partnership represents one of the new ways. We're seeing this attitude of "let's work this damn thing out," in a lot of places around the West. (quoted in Larmer 2004, 6)

Timber management provides another example of how devolution and accountability can improve efficiency, fiscal responsibility, and environmental stewardship. Donald Leal (1995) made side-by-side comparisons of federal and state forest management in Montana. He found that, while federal forests on average lost 50 cents on every dollar they spent, state forests made $2 for every dollar they spent. Moreover, state forests produced more environmental amenities such as clean water and wildlife habitat.

The difference between the two was the management incentives. Federal forest managers must grovel at the feet of congressional committees for their budgets and, for the most part, send their revenues to the black hole of the federal treasury. State forests, in contrast, are part of the state school trust lands and are charged with earning a profit for the school trust, not just today, but into the future. In so doing they are willing to make tradeoffs between which uses will generate more profits. Hence recreation, viewsheds, and other amenity values will be traded off against timber production if they can generate more revenue. This happens because there is a bottom line against which managers can be held accountable and because there are "shareholders" such as students, teachers, administrators, and parents, all of whom have a stake in efficiency.

Some policy analysts have suggested building on this trust concept to improve management. Dan Kemmis from the Center for the Rocky Mountain West in Missoula, Montana, has called for establishing "Region 7" for the U.S. Forest Service. This "virtual region" would not be a geographic region, but would be a set of experimental forests charged with producing specific outputs and services and managed by a board of directors. This approach is being tried with the Valles Caldera National Preserve. For it, Congress created a nine-member board of trustees appointed by the president. The law requires trustees to have expertise in areas important to the trusts' mission, such as livestock, forest, and wildlife and fish management. In balancing the various land uses, the trustees are also charged with making the preserve financially self-sustaining. [12]

Water

Resolving conflicts over water use in the West also requires devolution. John Wesley Powell, the nineteenth-century explorer of the West's great waterways, understood the importance of this type of federalism. Speaking to the Montana Constitutional Convention in 1889, Powell described what he thought would be the optimal geographical units for organizing county government:

> I want to present to you what I believe to be ultimately the political system which you have got to adopt in this country, and which the United States will be compelled sooner or later ultimately to recognize. I think each drainage basin in the arid land must ultimately become the practical unit of organization, and it would be wise if you could immediately adopt a county system which would be convenient with drainage basins (quoted in Kemmis 2001, 177).

Though his suggestions were totally ignored by Montana and other western states, his insights into the connection between the physical characteristics of natural resources and the optimal geographic region for organizing government are as profound today as they were then. Rather than having Congress and its agencies trying to resolve conflict in places such as the Klamath, these decisions should be devolved to the lowest common denominator. William Kittredge (2000, 33) observes that "Practical people who live in the Klamath Basin are developing homegrown political entities . . . . They are trying to solve local and regional problems within a framework of federal and state regulations, using local expertise."

Given that western water law is firmly rooted in the prior appropriation doctrine, water markets provide even more potential for devolution. If states would accelerate the adjudication of water rights, actors would know with whom they could bargain to reallocate water to new uses. In particular, allowing environmental interests to lease, purchase, or leave it instream for aquatic values is an important step toward resolving disputes between irrigators and environmentalists.[13] Though a state agency can often hold water rights for instream purposes, most western states restrict private groups from transferring rights from offstream to instream uses. In Montana, for example, the legislature had to change the law in 1995 to allow private groups to lease water and leave it instream. Between 1990 and 1997, purchases, leases, and donations were reported in 9 of 11 western states, totaling more than 2.3 million acre-feet of water (see Landry 1998). Groups such as the Oregon Water Trust, Washington Water Trust, and Montana Water Trust are filling a niche for voluntary, non-confrontational water trades to keep water instream.

Wildlife

Finally, the management of wildlife and wildlife habitat could benefit greatly from making the demanders and suppliers more squarely face the costs and benefits. The Defenders of Wildlife program to compensate livestock owners for losses caused by wolves reintroduced into Yellowstone National Park is an example. By raising private funds and structuring an evidentiary system for proving whether losses are caused by wolves, Defenders has accept a share of the cost of what it wants. Leasing or purchasing land for wildlife habitat is another example of how markets can shift production from tradition commodities to higher-valued amenities. And this need not be the domain of government. Non-profit groups, clubs, and associations, and for-profit firms can and do broker such transactions.

To further encourage such markets, agencies, especially at the state level, can do much more to make wildlife and its habitat an asset rather than a liability. Under state wildlife law, the wildlife belongs to and is managed by state agencies. Private landowners may be compensated for crop losses and other damages, but generally have little say in management and almost no incentive to improve habitat. A ranching for wildlife program such as the one in Colorado offers one way of making wildlife an asset. Such programs allocated a certain number of hunting permits to landowners who can then sell them to hunters at the market price. To get these permits, the landowner must develop a habitat management plan and have it approved by the state agency. As one Montana rancher described the tradeoffs between traditional land uses and wildlife habitat, "If it pays, it stays." Markets for hunting and other recreation on private land provide a way of making amenity values pay.[14]

Conclusion

We can learn a good deal from the frontier West which was an institutional crucible. There people bore the costs and reaped the benefits of developing institutions that encouraged good stewardship and discouraged negative-sum battles. They hammered out customary grazing rights, mining laws, and the prior appropriation water doctrine. These institutions served well for allocating natural resources among alternative uses, especially for the production of commodities.

In the New West, demands for natural resources to produce amenities have risen relative to demands for commodity production. Reallocating resources between these two uses has been a challenge for two reasons. First, some laws restrict transferring property from one use to another. This is the case with the prior appropriation doctrine that restricts transfers to instream use. Second, political institutions control the allocation of many resources, especially public lands and wildlife. Reallocation in the political process generally pits amenity demanders against commodity demanders in a game where one side's loss is the other side's gain loses. Conflict rather than cooperation is inevitable.

Recognizing existing property rights whether they be private, as with land, or political, as with grazing permits, and encouraging exchange of these rights can link the New West with its Old West heritage. This will require devolution from centralized governmental control to lower levels of decision makers. The lowest denominator for devolution is to individuals who voluntarily exchange property rights in the marketplace. Markets for conservation easements, grazing permits, water rights, and hunting habitat provide examples of how devolution to this denominator can supplant conflict driven by rent seeking with cooperation driven by gains-from-trade. Short of private property and markets, devolution to lower levels of collective action can also help. State school trust land and state park management is less contentious and more economically and environmentally sound. Local open-space bonds provide benefits to local citizens without forcing a small subset of landowners to bear the cost of development restrictions. Private ownership and devolution of governmental control offers the best hope of taking us back to a future where free and responsible individuals cooperate with one another as stewards of the West's heritage and natural bounty.

The Role of Law in the Toxic Legacy in the Rockies

By Phillip M. Kannan

Economic development was a more powerful force than environmental protection in the development of the West, including the Rockies. In the nineteenth century and the first half of the twentieth century, mining, logging, ranching, and farming were the most important components of the economy of the Rockies. These activities, especially mining, entail disruption and degradation of the environment. In any economy, the extent of environmental harm is determined by government regulation and self-interest. In the Rockies, these two possible restraints on environmental harm interacted to strip nature of much of its protection. There was little government in the Rockies and few laws protecting the environment. In fact, the law facilitated environmental degradation. Consider the example of hard rock mining. When gold, silver, mercury, and other metals were discovered in the West, laws regarding the rights to use water to facilitate their extraction were created while property laws that could have mitigated the environmental harm were ignored. The prior appropriation doctrine, summarized as first in time first in right, became the law of the mining camps and the states enabling a miner to stake a claim on land he did not own and use water he did not own. Property law was also ignored to the advantage of mining. Most mines were on land owned by the federal government or Indian tribes; miners were trespassers on this land, but the laws to protect the rights of owners against trespassers were not enforced.

The law not only legitimated these appropriations of public goods, but it also failed to control the environmental consequences that their exploitations caused. Miners dumped the tailings in the rivers or left them piled on the land exposed to natural processes. The costs of the harm to the ecosystems and to the services these systems provide were simply transferred to others – primarily to the public then and to the public now.

The second possible source of environmental protection, namely, self-interest, also failed. Because the miners and ranchers did not own the land, they felt little need to protect it. Likewise, because the water not used by one miner would be appropriated and used by another, miners could find little self-interest in limiting their use of water, and there was at least the possibility of economic gain if more water was used to expand their mining operations.

The dominance of economic interests over environmental protection continued through the twentieth century. Mining and ranching were joined by military and industrial activities as engines of (and manifestations of) progress. Later came tourism, recreation, and retirement communities to tax the environment and resources of the Rockies. These activities are not environmentally benign; however, their environmental risks are more manageable.

The last thirty years of the twentieth century also saw strengthening of the forces that protect the environment. In the years 1969 through 1980, Congress enacted the basic regulatory laws that are intended to mitigate environmental harm [1] – the Clean Air Act,[2] the Clean Water Act,[3] the National Environmental Policy Act,[4] the Resource Conservation and Recovery Act (RCRA),[5] the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (also called Superfund),[6] and the Endangered Species Act [7] to list a few. (Please *see the Notes section* on p. 116 for a further discussion of these acts.)

These laws have led to improvements nationally and in the Rockies; however, their effect on the environment of the Rockies has been mitigated by several factors, for example, scale and complexity. Consider CERCLA for example. This law is intended to force the polluter to clean up hazardous wastes or to pay the cost if others clean it up. For mining wastes, this approach is of limited effectiveness. Most of the mining companies that caused the pollution are bankrupt, have simply ceased to exist, cannot be located or have no assets. Moreover, the contaminated area often is not a well-defined contained site; it might be a river of scores of miles, such as the Clark River in Montana. The hazardous waste is not just a few thousand barrels or a few million cubic feet of contaminated soil. It is billions of gallons of water or billions of cubic feet of tailings or miles of tunnels of exposed surfaces containing heavy metals. This is a problem of scale. The heavy metals almost always occur in nature with sulfur. Sulfur combines with rain and snow to form sulfuric acid which leaches the heavy metals and increases their concentration and mobility and thereby their risk to the environment. This is a problem of complexity. It's not that CERCLA is of no effect in the Rockies in helping the environment; CERCLA has achieved some positive results. The limitations on the effectiveness of CERCLA in the Rockies come from the fact that a major type of pollution here responds less well to CERCLA. CERCLA was

designed for a different type of problem; there are plenty of those problems in the Rockies and CERCLA works as intended for them.

RCRA provides a second example of the incongruence of environmental laws and toxic waste problems in the Rockies. RCRA excludes almost all mining wastes from its "cradle-to-grave" control of the generation and disposal of hazardous substances. Again, the scale and complexity of mining in the Rockies make this exemption particularly harmful to that region.

The same incongruence is present in the Clean Water Act, which excludes return flows of irrigation from the definition of "point source." As a consequence of this exclusion, these sources of water pollution are not controlled by the strict permitting process created in the Clean Water Act. Because of the scale of irrigation in the West, including the Rockies, and the composition of the soils there, this exclusion is particularly harmful to the environment in that region.

Just as improving government regulations is helping to mitigate the environmental problems in the Rockies, so is a changing concept of self-interest. With the emergence of tourism and recreation as dominant economic forces in the Rockies, activities that detract from them are no longer in the self-interest of those dependent on them. Thus, because a mountain slope is more valuable for skiing or hiking or viewing than for mining, perhaps there will be fewer mines and less mining pollution in the future.

The changing economic base in the Rockies, from one dependent on the extraction of natural resources to one dependent on their conservation, is also redefining the self-interest of the region. It is now clearly in the best economic interest of the region to promote environmental conservation and preservation. An interesting possibility is that law will develop to facilitate this new economy just as it was created to favor and encourage the extractive culture of the past two hundred years. It will be more difficult for this new law to develop because it will not be written on a clean slate. Laws to facilitate the new economy will be constrained by property rights created under the old laws. For example, preserving the flow of a river that is desirable for recreation and tourism could be blocked by property rights held in the use of the water for crop irrigation, which reduces the flow and quality of the river. Although these rights were created at no cost to the owner for the use of the water, it would be very costly to extinguish them. The exemptions and incongruence discussed above are no longer in the self-interest of the Rockies and will require legislative amendments. Creative solutions to these sorts of problems are possible; however, they will require the energy of bright, committed people who understand such fields as economics, law, science, and politics and how they interrelate. The solutions will come only after much discussion, debate, and compromise.

The history of the development of the West is a study in the externalization of costs – development was achieved in a way that time and again provided benefit to those who did not bear the full cost of activity that generated the benefit. For the benefit of settlers, especially ranchers, farmers, and miners, land was taken from Native Americans, timber was taken from federal lands, water was taken from public rivers, and federal lands were grazed and mined at will. But more than these physical assets or goods were exploited for private gain at the expense of the public; entire ecosystems were degraded or destroyed, as were the services, such as preventing soil erosion, provided by these ecosystems. The cost externalization inherent in the development of the West, and the resulting degradation to the environment and to ecosystem services, were facilitated by the law, rather than prevented or mitigated by it. The challenge now is to recognize new communities of interest that can advocate policies and laws that facilitate the new economy and do this in a way that does not allocate costs unfairly.

Pertinent Environmental Laws - A Brief Summary

National Environmental Policy Act (NEPA) (1969)	Requires all federal agencies to prepare an environmental impact statement for all proposed federal actions that will have a significant effect on the environment.
Clean Air Act (CAA) (1970)	Intended to protect the public health and welfare from harm caused by air pollutants known to cause chronic harm to human health and welfare. Intended to require industry to adopt technology to control releases in to the air of hazardous substances. Intended to reduce air pollution from vehicles
Clean Water Act (CWA) (1972)	Intended to require industry to adopt technology to control releases into navigable rivers of conventional pollutants (suspended solids, for example) and hazardous substances. Requires states to classify all rivers in their boundaries (for example as fishable or drinkable) and enforce pollution limits to achieve these uses. Intended to protect navigable rivers and wetlands from harm caused by dredging and filling.
Resource Conservation and Recovery Act (RCRA) (1976)	Requires all generators of hazardous wastes to register with EPA or the state and to assure that their hazardous waste is treated, stored, or disposed in a facility that has a permit from EPA or the state and that their hazardous waste is transported to its final resting place by a licensed carrier under a strict manifest system.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (1980)	Intended to assure that releases of hazardous substances are remediated and that the cost of the remediation is paid by a responsible party.

San Luis Valley, Colorado: A New National Park

By Christine Renner

The Issue

On September 13, 2004, Secretary of the Interior Gale Norton formally dedicated the Great Sand Dunes National Park and Preserve (GSDNP). This final step in the Great Sand Dunes' re-designation from National Monument to National Park represents an elevation in status that accompanies a tripling of the park's size from 38,264 to 149,757 acres. The expanded boundaries include a 27,000-acre portion of the 97,035-acre Baca Ranch, which sits over a large part of the underground aquifer beneath the San Luis Valley (SLV). Now that the ranch is part of a national park, the water beneath it should be protected from any further threats of extraction and sale. In addition, national park status and expanded boundaries are likely to attract an estimated 24,756 additional visitors to the SLV each year. These visitors will bring new money into an economically depressed region of the state, providing an economic boost. However, the portion of Baca Ranch lands transferred to the National Park Service (NPS) represents a $47,362 annual loss in property tax revenues for Saguache County without comparable government compensation. Despite some drawbacks, the GSDNP serves the dual role of bringing new economic activity to the valley as well as providing protection for the valley's underground water supply.

The Place: San Luis Valley, Colorado

The GSDNP sits along the eastern edge of the SLV, with the Sangre de Cristo mountains as its backdrop. Located in the central part of southern Colorado, the valley stretches about 122 miles north to south, 74 miles east to west, and is home to 46,190 residents. Agriculture employs 56.8% of these people, while tourism, as the second highest employer, provides jobs to 18% of its residents. Tourists spent close to $78.4 million in the San Luis Valley in 2000, an increase of $12.7 million since 1996.

Estimating 24,756 new park visitors each year, Stephan Weiler and Andrew Seidl calculate that those visitors will contribute a total output impact of $2.4 million in sales, income, and induced economic effects spread among the six counties in the SLV. They also predict the creation of 67 full-time jobs. Building on their work, I ran a similar economic model, but narrowed economic impacts to Alamosa and Saguache Counties -- the two counties that encompass the park and will therefore experience the greatest economic impact. This model calculates $2.1 million in additional total output (in 2005 dollars) and the creation of 38.5 jobs in these two counties. These remain approximations but suggest that increased tourism may significantly boost the SLV economy.

The southern half of the park lies in Alamosa County, which levies a 4.0% local marketing tax on hotel and motel rooms and a 2.0% county sales tax. The northern half of the park lies in Saguache County, which does not levy a sales tax. Both counties collect a lodging tax of 1.9%. These taxes are important because they are the only way for county governments to generate revenues from increased tourism. Such revenues are essential to maintaining sufficient public infrastructure to support additional visitors.

As well as attracting new visitors, the GSDNP's expanded boundaries now protect much of the SLV's underground aquifer from water exportation. This aquifer has been a point of contention for decades. It is 6,000 feet deep in some parts of the valley and may hold over 2 billion acre-feet of water, giving it great potential economic value. However, years of drought have caused the water table to drop by up to 15 feet in some places. With water becoming increasingly scarce, farmers and ranchers have spent the past thirty years adamantly opposed to threats of water exportation from the valley's aquifer.

American Water Development Incorporated (AWDI) owned the Baca Ranch in the 1980s and sought capital gains on development of the water resources beneath the ranch. In response to increasing demand for water along Colorado's Front Range cities, such as Denver and Colorado Springs, in 1986 AWDI sought permission from the state to pump 200,000 acre-feet annually from the aquifer. SLV residents immediately made their opposition clear. They collected more than $3 million to fight AWDI in court. Author Sam Bingham describes how SLV residents went as far as to tax themselves in order to protect their water supply: "The state legislature created a special tax district comprising the whole valley, and in what amounted to the six poorest counties in the state, 45 percent of the voters turned out for a special election (more than ever voted in general elections) and voted twenty to one for a property tax that raised another half a million dollars." On November 22, 1991 the District Court for Water Division 3 rejected AWDI's proposal. Appeals to the Supreme Court of Colorado and the Supreme Court of the United States were also unsuccessful. AWDI then sold the ranch to Vaca Partners. Two of the partners, Stockman's Water and Yale University's endowment fund hoped eventually to export water from the ranch, but their efforts also failed.

The Baca Ranch remained under private ownership until The Nature Conservancy (TNC) bought the ranch for $31 million dollars in January 2002. TNC held the land in escrow until the relevant government agencies acquired the necessary funding from Congress to purchase it. The ranch is now officially part of the GSDNP. As long as the NPS manages the park according to its mission, the threat of water exportation via ranch lands is over. Simultaneously, additional visitation to the new and expanded GSDNP increases the prospect of economic stimulus to the SLV.

The Response

Around the SLV several communities and counties anticipate additional tourism and are taking steps to accommodate it. For example, the city of Alamosa, with 7,960 residents, lies seventeen miles from what is currently the only park entrance. Executive director of the Alamosa Chamber of Commerce, Patricia Skroch, expressed excitement about the re-designation, reasoning that most visitors will pass through Alamosa during their time in the valley. Alamosa's efforts to become more of a tourist destination include dividing Highway 160 into two, one-way sections through town. This will provide new retail opportunities along sections of the road and make the downtown more pedestrian friendly. In addition, the City of Alamosa has partnered with the Alamosa Uptown and River Association on initiatives to revitalize the downtown.

Although many look forward to new economic opportunities, national park designation also has its drawbacks. Saguache County is unlikely to benefit to the extent Alamosa County will because of both its loss in property tax revenues and its lack of a county sales tax. Another concern is the possible creation of a north entrance to the park near the town of Crestone, a town of fewer than 100 people with several hundred more in the surrounding area and over a dozen spiritual retreat centers. A north entrance would increase the number of visitors passing through Saguache County and, depending on where it is placed, through Crestone. Increased tourism could take away from the experience of solitude for which spiritual communities have come to Crestone. The San Luis Valley Ecosystems Council has created a forum through which residents of Crestone can express concerns about the effects of increased park visitation. Many residents are working to prevent the NPS from creating a northern park entrance through their community.

For residents in both counties, communication with the NPS has been essential to having their needs met. With representatives on the National Park Advisory Council, these communities have been able to express their concerns to park planners. As the next few years test whether predictions of increased tourism will happen, pathways of communication will be integral to ensuring that the SLV will develop a sustainable relationship with the GSDNP.

The Lessons for the Rockies

In a time of national budget cuts for the management of many public lands, the creation of a new national park with expanded boundaries, financed by Congress, is laudable. The GSDNP offers visitors recreation opportunities, scholars a healthy mountain ecosystem for field studies, local farmers and ranchers protection of the large quantity of water stored in the aquifer beneath the park, and valley residents prospects for new job opportunities and increased income.

Competition for water resources is part of life in the Rockies. Grass roots efforts to conserve water in the SLV can serve as an inspiration to other communities faced with similar pressure to extract and export their natural resources in ways that will harm their growing "amenity" economies. The SLV thus serves as an example of economic shifts occurring throughout the Rocky Mountains. Natural resource extraction as an economic sector has been on the decline for several decades. That combined with declines in farming leaves tourism and recreation as economic sectors on the rise. As communities work through how to handle increased tourism, local input and dialogue are essential if Rocky Mountain communities are to build good relationships with visitors, and develop in an economically and ecologically sound manner.

For more information:

Colorado College State of the Rockies Project
www.coloradocollege.edu/stateoftherockies
Great Sand Dunes National Park and Preserve
www.nps.gov/grsa
Alamosa Chamber of Commerce
www.alamosachamber.com
San Luis Valley Ecosystem Council
www.slvec.org

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San Juan Mountains: Reshaping the Region for the Twenty-First Century

By F. Patrick Holmes

The Issue

Persistent boom-bust cycles of natural resource extraction and community development have left much of the alpine region of southwestern Colorado with tremendous liabilities in the form of acid-mine drainage, tattered and scarred landscapes, and seasonal economic stagnation. Still, the rich natural setting of a region that is over 63% federally owned, has led to new opportunities in the form of economic growth dominated by industries that benefit from the presence of tourists, retirees, and entrepreneurs. Job growth in the San Juans over the past three decades far outpaces the state of Colorado and the nation as a whole, but the recent influx of workers to the region has not come without its consequences. Open spaces have suffered as the average size of a farm or ranch in the region has been cut in half from over 1,500 acres in 1992 to just 782 acres in 2002. Historically, the region's population doubled to its current rate over the course of about 60 years or so from 1940 through 2000, but now population forecasts show that the region will again double its size in about half that time, by 2030.

As some residents attempt to grapple with the new "boom" in the San Juan Mountain economy, other parts of the region have not yet fully made the transition. The region as a whole still struggles with persistently declining average earnings per job, and earnings of the self-employed – generally a good indicator of the entrepreneurial energy of the region – also lag substantially behind the Colorado average.

No regional collaborative management group has emerged to collectively guide the San Juan business community to foster both improved economic activity and dutiful respect for the natural setting that now constitutes the region's competitive advantage. New legacies and liabilities have surfaced, as rapid land-use change, swift habitat deterioration, and wilting seasonal economies increasingly diminish the quality of life for the region.

The Place: Silverton, Colorado

Known formidably as "the mining town that won't quit," Silverton, Colorado, sits at 9,300 feet in the heart of the San Juan Mountains. People of Silverton have a tremendous sense of pride in their town's rich history as a prospering mining community, and have adopted this pride into a premier summer attraction for travelers seeking a window into the past as well as a contemporary mountain setting. The town's carefully preserved Victorian charm and tremendous scenic beauty bring tourists from all over, most of whom arrive via the seasonally operated Durango-Silverton narrow gauge railroad. The firm resiliency and endurance of Silvertonians, in the face of what they have come to understand as inevitable economic downturns, have fostered strong community ties. While the isolated winters in Silverton are a struggle financially, the town seems to welcome the opportunity to take root again in the close-knit fabric of their small mountain community.

The Response

Silverton as a "gateway" community to the San Juans is not alone around the region. The State of the Rockies Project draws a comparison between the town of Silverton and its symbiotic relationship to the San Juans and other similar situations in the Rockies. Red Lodge, Montana, stands out. Red Lodge also has its economic lifeline severed in winter from its premier attraction, Yellowstone National Park. Analysis and reflection focused on a number of these community-region links have made it increasingly clear that Silverton has to rethink its economic conundrum. In doing so, review and site-visits to other communities with problems and challenges facing Silverton and the San Juans can offer perspective and hope for the future. Our recommendations for enhancing economic vitality in Silverton reflect new directions and new opportunities for their determined and humble citizens: Silverton must turn its geographic isolation into its principal economic advantage.

Here is a short list of economic development techniques that may benefit any community in the Rockies, including Silverton and the surrounding San Juan mountain region:

-The provision of financial advisory and property services to firms and businesses setting up or expanding in the area,
-The investigation and implementation of economic development projects over all sectors of the economy, and the provision of technical advice,
- Assisting social and cultural development.

The San Juan 2000 organization, a local development organization in Silverton, has taken many of the correct steps by providing a revolving small business loan program and other financial advice services. San Juan County is also an Enhanced Rural Enterprise Zone, which provides small businesses with up to ten different tax credits and incentives for locating in the area.

These incentive structures are a necessary, but insufficient step for jump-starting the Silverton economy. Improving the social and cultural infrastructure of the community is another important step.

A headline from the *Denver Post* about the newly formed Mountain Studies Institute in Silverton summed up the new direction the community must take: "Knowledge mined from Silverton Hills."

Prosperity for rural areas depends on combining traditional strengths with an appetite for change. Silverton has done a little of this, building upon their mining traditions and their community resiliency. They also have excelled in an innovative experiential school program. What else might they do?

One option is business tourism. Business tourists generally visit communities in the spring and fall (extending the tourist season effectively), spend more money than traditional tourists, and account for more hotel sales on average nationally. There might be some ways in which Silverton could provide a business tourist environment where training and development workshops, teambuilding, etc. might thrive in an isolated mountain town.

How might the community make the best of its unique isolation economically? Could Silverton become a hub of unique mountain culture, offering unique San Juan mountain services and products? If so, what might those products and services be? Can and should Silverton market itself as a "unique" place more effectively? What barriers (high property taxes, limited affordable housing, limited telecommunications infrastructure) exist that prevent the creation of an environment where Silverton businesses can thrive? What industries might benefit from a close-knit community in an inspiring setting?

In all of this, the community has tremendous assets: a world-class mountain setting, a rich, rugged culture, and a talented, well-educated workforce.

The Lessons for the Rockies

The decision to move to a new place is often not based solely on employment opportunities. Business and individual location decisions are based on a wide array of lifestyle interests. Still, attracting businesses to high-amenity regions will ultimately require more than just the amenities themselves. Succinctly put, stimulating entrepreneurship in rural areas requires an organizational infrastructure to act as a catalyst.

The San Juan Mountains represent the largest intact ecosystem in the Southern Rockies. There may be some opportunities to learn from the innovative efforts of regional partnerships in the Northern Rockies.

The mission of the Yellowstone Business Partnership: "to serve as an educator and consensus builder in promoting community vitality, a prosperous economy, and a sustainable environment throughout an ecologically linked region," may provide an excellent model of how the San Juans might work together to improve regional economic vitality.

As the region and its "heart of Silverton" move towards a thriving amenity-driven economy, it ought to seek new economic opportunities through regional collaborations that recognize the connection between the area's unique natural assets and vibrant local economies.

For more information:

Mountain Studies Institute
www.mountainstudies.org
Yellowstone Business Partnership
www.yellowstonebusiness.org

Special thanks to the Seven Springs Foundation for funding this research.

West Yellowstone, Montana: A Captive Gateway Community

By Bryan Hurlbutt

The Issue

Throughout the Rockies an abundance of scenic federal lands, from national parks to wilderness areas to wildlife refuges, draws millions of visitors to all corners of the region each year—visitors in need of lodging, gas, food, recreational equipment and experiences, as well as knick-knacks! In response, gateway communities have popped up and boomed on the outskirts of natural amenity lands to serve as staging grounds to visitors. But across the Rockies, public lands are becoming crowded and in some cases being "loved to death," and land managers are being pressured, often via lawsuits, to regulate and limit visitation, introducing uncertainty for the economic base of gateway communities. Since many gateway communities depend almost entirely upon visitors to fuel their community's economy, wild variations in federal land use visitation restrictions not only create uncertainty, but also can quickly turn boom to bust. For federal lands managers the proper balance between increasing visitation to support adjacent communities vs. reduced visitation to protect the natural resources is difficult at best, and often impossible to achieve. The myriad lawsuits on all sides, responding to any changes in visitation, speak to this devil's choice.

The Place: West Yellowstone, Montana

The "hub of Yellowstone Country"—West Yellowstone, Montana—was established in 1920 as a western gateway to America's first national park. One million park visitors now pass through its hotel, restaurant, and shop-lined streets each year. Initially, West Yellowstone ("West") was just a summer destination, and less than 10% of West's businesses stayed open through the winter season (December through March) in the 1960s. But West, with its large annual snowfall and close proximity to both the park and Gallatin National Forest, capitalized on the snowmobile enthusiasm of the 1980s and 1990s. By 2000, around 80% of the businesses in the "Snowmobiling Capital of the World" remain open for winter visitors, the vast majority of which are snowmobilers—the staple of West's winter economy.

As the popularity of snowmobiling from West into Yellowstone National Park continued to increase from winter to winter, so did concern about the impact of snowmobile noise and air pollution on both the park's resources and the experience of visiting the park during the winter. Beginning in 1997 when The Fund for Animals, et al., sued the National Park Service over its Yellowstone snowmobile policy, snowmobiling in the park has been a heated political issue. Conflicting court cases, scientific studies, and park management plans led to wild variations in snowmobile policy in the park, ranging from a complete phase-out of snowmobiles to continued, though restricted, use.

West Yellowstone Chamber of Commerce

At the start of the winter season beginning in December 2003, the Park Service was ordered to lift the new snowmobile ban at the last minute and develop temporary plans allowing limited snowmobiling. It seemed as if West's winter economy would be saved, but it was already too late. "You can't market when you don't know what you're marketing," says Marysue Costello, director of the West Yellowstone Chamber of Commerce, and West did not know what it was marketing for winter 2003 until the day it started. By this point in time there was so much confusion that even some residents of West itself thought the park was closed for the winter!

As a result, snowmobile visits into Yellowstone NP via West fell from over 50,000 during the winter season beginning in December 2001 to just over 20,000 two winters later (*See* **Table**). During the same period, West's winter-season resort tax collections, which are a vital part of West's tax base and are a good indicator of West's economic health, fell from nearly $550,000 to barely $400,000 (*See* **Table**), sending a wave of terror through town almost as thrilling as snowmobiling itself!

West Yellowstone Park Visits and Resort Tax Collections, 1999 - 2004

Year	Winter Season			Non-winter Season		Year Total	
	All Park Visits from West Yellowstone	Snowmobile Park Visits from West Yellowstone	West Yellowstone Resort Tax Collections	Park Visits from West Yellowstone	West Yellowstone Resort Tax Collections	Park Visits from West Yellowstone	West Yellowstone Resort Tax Collections
'99-00	58,154	52,575	$499,095	1,169,772	$1,255,153	1,227,926	$1,754,248
'00-01	99,441	58,127	$544,950	1,083,221	$1,207,081	1,182,662	$1,752,031
'01-02	70,371	64,063	$536,996	1,004,551	$1,113,172	1,074,922	$1,650,168
'02-03	49,703	42,540	$476,037	1,111,486	$1,238,788	1,161,189	$1,714,825
'03-04	28,890	20,038	$401,664	1,156,045	$1,330,596	1,184,935	$1,732,260

Winter-season park visits only make up around 6% of annual visits to Yellowstone via West, and non-winter visits (April-November) actually grew from about 1 million in 2001 to over 1.15 million in 2003. Although winter visitors spend more per person than summer tourists, the surge in non-winter visits was enough to counteract winter tax losses. Grouping non-winter seasons with the following winter season, meaning the year begins in April of that year and runs through March of the following year, yearly total resort tax collections actually grew from about $1.65 million in 2001 to $1.73 million in 2003.

Nevertheless, a solid winter economy is important for the community. Jack Clarkson, a campground operator and snowmobile renter in West, remembers the old days when you couldn't buy fresh produce in town during the off season. Few wanted to or could afford to just sit around in West, so most residents left during the long, cold winter and only returned for summer business, diminishing the sense of West as a year-round community and discouraging potential business owners.

Reestablishing a solid winter economy will be no easy task for West. Clarkson points out, "it would take 4 cross-country skiers to replace one snowmobiler in terms of town income." And Costello admits that "it's going to be a challenging time in the community," but she's confident in the potential West has to draw a diverse group of visitors year-round.

The Response: Economic Diversification

West is already taking steps to communicate more effectively with land managers, better anticipate and plan for federal land use changes, and diversify not only its winter tourist visits but also its summer tourist trade and its overall economy. In addition, the community is developing creative new ways to lengthen stays and increase spending from the visitors who already come to town instead of just relying on increased visitation to stimulate the economy. Land managers are realizing that, although catering to gateway communities is only part of their mandate to delicately balance land use and preservation, they can work with, be open to, and provide some stability for these vital communities. Yellowstone National Park's "Temporary Winter Use Plan" permits limited snowmobiling in the park through at least 2007 while the park service conducts another environmental review. West is exploring a variety of things to diversify and strengthen the economy including:

- -promoting a variety of winter recreational activities: snowmobiling inside and outside of Yellowstone NP, snow coach tours, crosscountry skiing, snowshoeing, and ice sculpting;
- -attracting business tourism;
- -hosting more events, like festivals and competitions;
- -restoring the historic district;
- -developing an arts & culture district;
- -building the Western Heritage Arts Center;
- -increasing public transportation to and from nearby cities;
- -opening a higher education campus.

The Lessons for the Rockies

As public land use around the Rockies continues to increase and collide with federal land managers' mandates to limit and manage visitation, gateway communities can learn from West's experience. The irony is that a symbiotic relationship exists between the gateway communities and the adjacent federal lands. Provision of community services not only for residents and visitors, but also public lands employees, is essential; yet these services are not appropriate within the federal lands. Such service is expensive both in terms of private capital costs for stores, hotels, shops, and rental recreation equipment, as well as in terms of local government costs to provide roads, schools, fire and police protection, and a myriad of other necessary services. But the seasonal to year-around health of these gateway communities is closely tied to visitation policies on the federal lands. Thus, each "side" in this face-off depends upon the other to survive and thrive. Political pressures will never be absent from such highly charged issues, but there is need for longer-term stability of visitation policies by the federal lands and diversification of economic livelihoods by the gateway communities. These steps would go a long way toward reducing the level of "economic stakes" involved and introduce more gradual changes in how the Rockies and its gateway communities play host to the millions of visitors coming to enjoy our beautiful lands and friendly communities.

For more information:

"The Economic Impact of the Quasi Snowmobile Ban on the Gateway Community West Yellowstone, MT" by Bryan Hurlbutt
www.coloradocollege.edu/stateoftherockies
West Yellowstone Chamber of Commerce
www.westyellowstonechamber.com
West Yellowstone News
www.westyellowstonenews.com
Yellowstone Business Partnership
www.yellowstonebusiness.org
National Park Service
www.nps.gov

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National Parks

Yellowstone National Park

By F. Patrick Holmes and Bryan Hurlbutt

Under Stress

Some eighty-eight years ago, congress authorized the creation of the National Park Service, stating in the preamble of the Organic Act of 1916 that the intent of the newly formed agency would be

> "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." [1]

More than fifty years later, Edward Abbey would declare this mission a "contradictory mandate." After all, the need to "provide for the enjoyment" of the people with access roads and facilities clearly competes with the dissenting need to leave the park resources "unimpaired" for future generations, if the term unimpaired is interpreted in the strictest sense of the word.

What Ed Abbey didn't foresee when he yanked those road survey stakes from the high Utah desert, and what his eventual musings in *Desert Solitaire* failed to conceive, was the ultimate reconciliation of these two seemingly polar mandates of the National Park Service nearly a century after they were originally written.

Today, the real irony sets in when we discuss an estimated $4.6 billion backlog of maintenance needs at our parks - accruing costs from years of use and over-use of the facilities that the service provides and administers for our enjoyment.

Since Abbey's well-known critique of the service, the focal point of the debate for many park enthusiasts has profoundly shifted. Today, conservation groups are not trying to prevent the paving of our parks, but rather, they are trying to maintain park facilities so that repair efforts keep pace with the increasing levels of demand placed on park roads, buildings, and trails by ever increasing visitation levels.

The fury of political discourse over park service management, with charges and counter-charges, has since enveloped the specific issue of the maintenance backlog, hindering the public's ability to understand what is happening to our most cherished natural, cultural, and historical assets: our national parks.

Should we believe politicians and bureaucrats who control budgets and staffing for the national park system? Should we heed the "other voices' " claims of doom and gloom scenarios for the same National Park Service and its individual park units? Indeed, what is the proper role for public information and participation in setting levels of funding and staff for the "crown jewels" of the nation? For citizens of the Rockies, the continued investment in these areas that form our backyard, our memories, and for many of us, our economic lifeblood, is of salient concern.

In an attempt to sort out the highly charged issue of the "maintenance backlog," the State of the Rockies Project filed a Freedom of Information Act request with the National Park Service in the fall of 2004. The requested data provides site-specific information about a broad range of facility assets in our parks, their replacement value, levels of deferred maintenance that remain to be addressed, and the Bush administration's schedule for reducing this backlog over the next five years. This newly released information provides a more comprehensive park-by-park understanding of the financial resources it will take to keep our parks healthy and whole. When this important financial requirement, necessary to "heal" parks and adequately equip them to serve their legal mandate, is combined with other data on staffing, visitation, funding, and proposed rehabilitation and repair projects, a comprehensive picture begins to emerge on the actual status of our national parks.

Political Disputes:

In October 2000, President Bush declared, "I will ensure that the federal government meets its responsibilities by devoting $5 billion to eliminate the backlog in maintenance and improvements at our national parks." [2] Estimates of the magnitude of the reported backlog have ranged from $4.08-$6.8 billion.[3] By September 12, 2004, President Bush said he has "devoted $3.9 billion to maintenance projects, putting the park service on track to eliminate the maintenance backlog." [4] Repeated claims by President Bush, Interior Secretary Gale Norton, and Park Service Director Fran Mainella that the administration is funding the national parks with "more funds per employee, per acre, and per visitor than any time in the history of the National Park Service" have become the focal point of speeches and interviews, and have been trumpeted as the principal success of the Bush administration's environmental record.[5] Lynn Scarlett, assistant secretary for policy, management and budget, remarked, "Our bottom- line message is that at no time have the parks got [sic] the attention they've got in the last four years," a sentiment that has been echoed by Secretary Norton who has said, "Never before have our parks received so much care." [6]

These claims have been met with particularly vocal responses from several special-interest groups, and subsequently, members of Congress.[7] Assertions that "creative accounting" techniques have enabled the administration to stake claims to nearly $4 billion of funding towards the backlog have been led by the nonprofit advocacy group The National Parks Conservation Association, which says the park service has spent only $662 million in new money to reduce a backlog of maintenance needs.[8] The group says the rest of the money is going to routine repairs that are regularly funded in NPS appropriations. An editorial in the *New York Times* provides a similar critique:

> "With the peak season for park visits almost upon us, this page has begun reviewing the troubled park system, … Mr. Bush, who made such a big deal of the parks during his presidential campaign, has not come close to delivering on his promise to clean up the maintenance backlog. But this has been a bipartisan failure not only by indifferent presidents, but also a long line of irresponsible Congresses…The money we spend on the parks, about $2.4 billion a year, is one-tenth of 1 percent of the total federal budget of $2.4 trillion, not much more than a rounding error. Surely a nation as wealthy as this one can do better. These are our jewels, deserving of far more jealous safekeeping than we are giving them now." [9]

Amid the increasing number of claims that the administration's "rosy" outlook of our national parks lacks credibility, Secretary Norton has responded, questioning the original $4.9 billion estimate developed during the 2000 presidential campaign.[10] In an interview she remarked, "It turns out that wasn't a useful guide. All of that was guesstimate. Nobody went out there and did what a real property manager does, which is to physically assess the facilities and document it." [11]

Current Director of the NPS Fran Mainella

To apply data to a reduction in "guesstimates," the staff of the park service have worked diligently over a number of years to implement a sophisticated accounting system for physical assets, their current replacement value, deferred maintenance, and a systematic five-year strategy for addressing the measured maintenance backlog.

Trends in Visitation, Full-time Employees, Acreage, and Appropriations

Before analyzing data on the maintenance backlog, we must first explore trends in appropriations. This information charts the basic life-blood of park units, annual levels of funding for staffing, operations, and maintenance. To the credit of the Bush administration, when we look specifically at congressionally appropriated funding in constant 1994 dollars, its claim of increased funding holds up. System-wide, the national parks are receiving more funding per visitor, per acre, and per employee than they have before (*See* **Table 1**). Upon further analyzing 1994 through 2005 NPS actual appropriations and projected trends and breaking these statistics down by region, however, this claim is not as meaningful as it seems.

First of all, claims of "ever more" are nothing new. Funding per visitor, per acre, and per employee have been growing above the previous year's levels almost every single year from 1994-2005, and in many instances this growth has been slower over the past few years. Though we applaud the continuation of this trend, it cannot be flaunted as a major accomplishment.

From 1994-2001, average system-wide funding grew by over $18 million annually, but since 2001, such funding has grown less than $6 million annually. Had funding increases remained the same since 2001, total NPS appropriations would be $828 million in 2005, over 6% more than the $778 million total appropriation projected for 2005. The eight-state Rockies Region, formerly accustomed to an increase of $3.8 million in annual appropriations from 1994 to 2001, has only received a $670,000 annual increase since 2001 (*See* **Table 2**).

Furthermore, certain NPS regions are receiving more funds at the expense of other regions – mostly in the West – many of which are not being funded at record levels. The National Capitol NPS Region accounts for the most significant regional share of the increased funding per visitor since 2001, likely as funding directed toward counter-terrorism efforts. For the Rockies parks, appropriations per visit, per acre, and per employee have actually gone down in 2003 from their highs over the previous ten years.

Rehabilitating the Many Glacier Hotel at Glacier National Park

(photos courtesy of Glacier National Park)

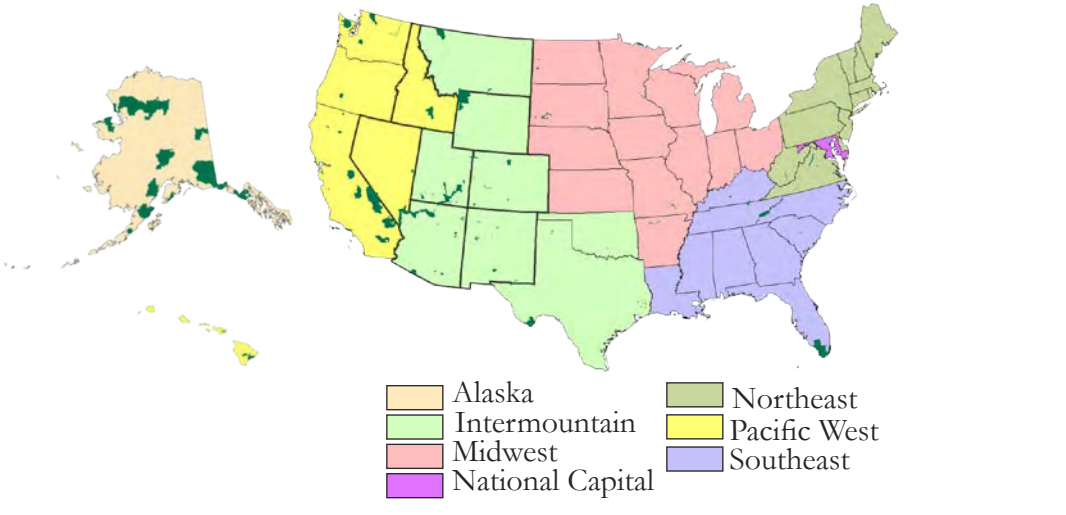
Table 1.
Appropriations Summary for all National Parks in the U.S.

	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Forecast FY 2004	Forecast FY 2005
Constant $1994 Dollar Appropriations per Visit	$0.24	$0.24	$0.25	$0.25	$0.25	$0.26	$0.26	$0.27	$0.28	$0.30	$0.30	$0.31
Constant $1994 Dollar Appropriations per Acre	$0.77	$0.77	$0.76	$0.79	$0.83	$0.83	$0.85	$0.89	$0.90	$0.90	$0.90	$0.92
Constant $1994 Appropriations/FTE (thousands $)	$43,628	$44,965	$42,651	$45,287	$45,689	$45,844	$45,758	$46,808	$47,438	$47,744	-	-

Table 2.
Appropriations Summary for National Park Regions and the Eight-State Rocky Mountain Region

	FY '05 Appropriations Request ($1994)	FY 'O5 Appropriations per Visitor FY 2005 ($1994)	FY '05 Appropriations per Acre FY 2005 ($1994)	Appropriations per Full-Time Employee FY 2003 ($1994)	Average Annual growth in Funding per Acre FY 1994 - FY 2001	Average Annual Growth in Funding per Acre FY 2001- FY 2005	Average Annual Growth in Funding per Visitor FY 1994-2001	Average Annual Growth in Funding per Visitor FY 2001-2005
All Parks	$777,952,861	$0.31	$0.92	$47,743.58	2.0%	0.8%	1.6%	3.0%
NPS Regions								
Alaska	3.6%	$1.28	$0.05	$88,678.42	4.6%	1.1%	1.2%	-0.2%
Intermountain	20.7%	$0.44	$1.62	$40,593.71	2.9%	1.0%	4.6%	3.9%
Midwest	10.2%	$0.38	$4.54	$46,929.90	5.1%	0.5%	5.2%	0.5%
National Capital	9.9%	$0.29	$98.76	$55,018.71	2.2%	0.7%	-6.1%	8.7%
Northeast	20.7%	$0.33	$10.36	$54,591.24	2.3%	1.0%	1.3%	4.6%
Pacific West	20.2%	$0.30	$1.20	$43,137.12	-3.9%	0.5%	1.6%	2.0%
Southeast	14.7%	$0.17	$2.98	$49,287.77	3.9%	0.7%	2.6%	0.7%
The Rocky Mountains	19.5%	$0.39	$1.36	$40,234.59	1.9%	0.5%	4.5%	3.4%

Figure 1.
National Park Service Regions as Compared to the Rocky Mountain Region



The Maintenance Backlog

The Park Service's new Facility Management Software System (FMSS) has enabled the service to systematically inventory physical facility assets and apply industry standards for preventative maintenance, cyclical maintenance, replacement, and priority of improvement. Cost-effective decisions that utilize an asset priority index are in place at every park unit, enabling park planners to efficiently address current and future maintenance needs. For the first time ever, when the park service considers the decision to build a new visitor center or other facility, they are considering the full costs of operating and maintaining that facility in perpetuity.

Estimates at each park of the total replacement value and deferred maintenance cost of seven asset categories have been conducted. These assets are:

-buildings
-campgrounds
-housing
-trails
-unpaved roads
-waste-water systems
-water systems.

Work orders are then incorporated into the Park Rehabilitation and Repair Program provided they meet certain requirements as to their priority. This program provides a five-year look at proposed projects aimed at alleviating the backlog.[12]

Difficulty in stating the total amount of deferred maintenance costs that currently exist within the park system arises from individual park considerations about whether or not to repair or replace assets and the priority in which these replacements or repairs are conducted. Also, estimates of the total deferred maintenance are based solely on the seven asset categories measured, and thus do not include backlog costs for other assets like protection of archaeological sites and natural resource projects. Because of this, the figures provided by NPS's FMSS can be considered conservative estimates of the actual maintenance backlog because, in general:

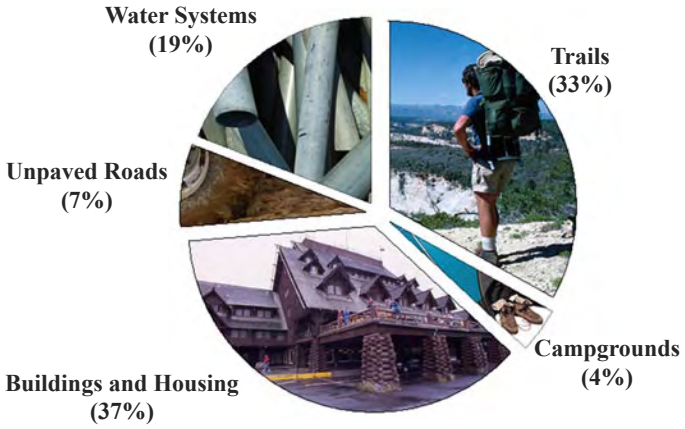
1. replacement costs far exceed repair costs,
2. including more assets in the analysis will increase the known backlog,
3. foregone funding to repair or replace assets causes deferred costs to accrue, and
4. variable operating deficits contribute to increased backlog.

The current amount of known maintenance backlog for all national parks in the U.S., based upon the estimates of the asset categories included in the facilities system, is about $2.14 billion for the units participating in the analysis. Three separate programs are generally used to fund backlogged maintenance needs, the repair and rehabilitation program, line-item constructions approved separately through the congressional budget, and funds from the fee-demonstration program. Additionally, funding from the proposed reauthorized Transportation Equity Act for the 21st Century would address paved road maintenance needs, an asset category not included in the current FMSS analysis, and thus ignored for the purpose of our analysis.

Table 3.
Remaining Deferred Maintenance by Category for the Rocky Mountains

Asset Type	Current Replacement Value	Total Deferred Maintenance	Percent of Assets That are Deteriorated (Deferred Maintenance/Current Replacement Value)	Planned Funding from Repair, Rehabilitation and Construction Projects through FY 2009	% of Deferred Maintenance Funded through FY 2009	Remaining DM through FY 2009
Buildings & Housing	$3,381,684,096	$136,451,856	4%	$57,220,218	42%	$79,231,638
Campgrounds	$107,546,373	$16,374,303	15%	$2,039,382	12%	$14,334,921
Trails	$296,246,293	$152,244,315	51%	$11,690,588	8%	$140,553,727
Unpaved Roads	$251,369,355	$29,450,531	12%	$4,647,239	16%	$24,803,293
Water Systems	$1,528,286,189	$79,183,570	5%	$36,062,351	46%	$43,121,219
Total	$5,565,132,306	$413,704,576	7%	$111,659,778	27%	$302,044,798

Figure 1.
Existing Deferred Maintenance by Category for the Rocky Mountains as of October 2004



Grading the Parks in the Rockies

Through careful inventory of proposed repair and rehabilitation, as well as line-item construction projects through fiscal year 2009, the State of the Rockies Project grouped proposed funding for each park unit in the Rocky Mountains into five major asset categories: Buildings and Housing, Campgrounds, Trails, Unpaved Roads, and Waste and Water Systems. Proposed projects that did not meet the assets measured were not included in the analysis. For each asset category in each park, the Rockies Project then compared the proposed funding to the level of deferred maintenance. Because it is often more cost effective to replace assets rather than repair them, the proposed funding level often exceeds the level of deferred maintenance for that category. Still, this "extra" funding to completely replace a visitor center, for example, that more than covers the Buildings and Housing deferred maintenance level shown, does not eliminate deficiencies in the other asset categories. As a result, it is not possible to measure yearly the level of deferred maintenance not funded, but it is possible to calculate the remaining level of deferred maintenance not met by appropriations through 2009. This is possible if we assume that funding levels that meet or exceed the level of deferred maintenance in an asset category correct all the deficiencies for that category.

Table 3 depicts the level of remaining maintenance needs, and the percent funded for each category for the Rocky Mountains. Most of the deficiencies in trails, campgrounds, and unpaved roads will likely remain, even after five more years of funding. Less than half of the deferred maintenance is planned to be eliminated in the Rockies by 2009 in the categories of Buildings and Housing, and Water and Waste Water Systems.

Table 4 grades all of the National Parks in the Rockies. Three different scenarios are presented for the likely percent of the maintenance backlog that will remain after 2009. These scenarios are based upon different possible amounts of funding from the fee-demonstration program that is diverted towards maintenance needs, in addition to the repair and rehabilitation and line item construction funds coming from annual appropriations. Under scenario 1, no fee-demonstration revenue is added to each park's funding for deferred maintenance. Under scenario 2, all fee-demo money would go to fixing the maintenance backlog. Under scenario 3, 55%, or the national average of fee demonstration money put toward the maintenance backlog, is included in the funding.

Finally, grades for each park unit in the Rockies have been assigned based upon a composite score of two indicators: 1) the percent of the deferred maintenance remaining after 2009 if the national average of fee-demo funds are devoted to the planned funding of deferred maintenance, and 2) the remaining deferred costs as a percent of the current replacement value of all park assets (scenario 3). The first measure evaluates how much of the park's maintenance backlog will be addressed; the second measure evaluates how substantial the remaining maintenance backlog is for that park. Parks that will likely have all of their maintenance backlog addressed by 2009 tied with the same grade of A- to B-. (Note: For more information on how composite scores and grades are calculated please *see the Methods section*.)

Table 4.
Grading the National Parks in the Rockies

Park	Current Replacement Value (CRV) of Inventoried Physical Assets $	Measured Deferred Maintenance $	Deferred Maintenance Remaining in 2009 after…							Grade for Maintenance Addressed
			Planned Projects and Line Item Construction (scenario 1)		Planned Projects, Line Item Construction, and 100% of Projected Fee Demo Revenues (scenario 2)		Planned Projects, Line Item Construction, and 55% (or the National Average Going Toward Deferred Maintenance) of Projected Fee Demo Revenues (scenario 3)			
			$	%	$	%	$	%	% of Asset CRV	
Sand Creek Massacre NHS	-	0	-	-	-	-	-	-	-	A
Rainbow Bridge NM	-	0	-	-	-	-	-	-	-	A
Gila Cliff Dwellings NM	-	0	-	-	-	-	-	-	-	A
Minidoka Internment Camp NM	-	0	-	-	-	-	-	-	-	A
Yucca House NM	-	0	-	-	-	-	-	-	-	A
El Malpais NM	8,861,763	289,184	289,184	100%	0	0%	0	0%	0%	A- to B-
Lake Mead NRA	124,666,652	29,605,872	7,321,677	25%	0	0%	0	0%	0%	A- to B-
Yellowstone NP	1,055,446,611	16,394,488	6,838,196	42%	0	0%	0	0%	0%	A- to B-
Grand Canyon NP	704,681,314	34,941,302	32,635,954	93%	0	0%	0	0%	0%	A- to B-
City of Rocks NRes	2,358,736	147,329	147,329	100%	0	0%	0	0%	0%	A- to B-
Petrified Forest NP	48,337,539	5,377,613	1,272,602	24%	0	0%	0	0%	0%	A- to B-
Chaco Culture NHP	15,337,865	348,765	1,607	0%	0	0%	0	0%	0%	A- to B-
Chiricahua NM (includes Fort Bowie)	2,134,585,654	7,076,319	815,705	12%	0	0%	0	0%	0%	A- to B-
Casa Grande Ruins NM (includes Hohokam Pima)	9,097,353	285,624	285,624	100%	0	0%	0	0%	0%	A- to B-
Big Hole NB	6,416,241	375,645	190,883	51%	0	0%	0	0%	0%	A- to B-
Devils Tower NM	7,088,872	2,087,046	1,242,571	60%	0	0%	0	0%	0%	A- to B-
Tonto NM	5,001,071	71,255	71,255	100%	0	0%	0	0%	0%	A- to B-
Montezuma Castle NM (includes Tuzigoot)	9,824,547	1,060,080	1,060,080	100%	0	0%	0	0%	0%	A- to B-
Nez Perce NHP	8,416,794	40,375	31,875	79%	0	0%	0	0%	0%	A- to B-
Grant-Kohrs Ranch NHS	24,026,800	207,635	27,835	13%	0	0%	0	0%	0%	A- to B-
Little Bighorn Bttfld NM	9,777,547	327,429	327,429	100%	0	0%	0	0%	0%	A- to B-
Tumacacori NM	4,609,394	73,206	24,501	33%	0	0%	0	0%	0%	A- to B-
Navajo NM	8,566,453	373,061	348,061	93%	0	0%	0	0%	0%	A- to B-
Timpanogos Cave NM	7,817,081	464,094	439,454	95%	0	0%	0	0%	0%	A- to B-
Aztec Ruins NM	3,365,346	212,896	4,698	2%	0	0%	0	0%	0%	A- to B-
Pipe Spring NM	13,256,608	193,260	193,260	100%	0	0%	0	0%	0%	A- to B-
Capulin Volcano NM	7,213,630	626,708	235,696	38%	0	0%	6,090	1%	0%	C+
Bandelier NM	25,222,109	2,407,557	1,826,320	76%	0	0%	191,180	8%	1%	C+
Fort Laramie NHS	15,742,502	1,487,580	344,796	23%	70,106	5%	193,716	13%	1%	C+
Flagstaff Area National Parks	24,259,748	8,972,668	2,751,906	31%	0	0%	1,046,796	12%	4%	C+
Glacier NP	198,378,496	27,648,791	9,527,540	34%	329,125	1%	4,468,412	16%	2%	C+
Zion NP	78,173,378	5,899,414	5,483,697	93%	0	0%	1,155,444	20%	1%	C+
Hovenweep NM	4,334,971	224,546	90,882	40%	16,686	7%	50,074	22%	1%	C+
Salinas Pueblo Missions NM	3,132,936	544,095	544,095	100%	0	0%	172,154	32%	6%	C

"Popularity draining park's resources: RMNP study cites funding constraints"
Denver Post 8/8/2002

"Nurture at odds with nature in Rocky Mt. National Park"
Denver Post 2/23/2003

2002

2003

"Parks face budget cuts, repair crisis"
The Gazette 5/25/2003



Park	Current Replacement Value (CRV) of Inventoried Physical Assets $	Measured Deferred Maintenance $	Deferred Maintenance Remaining in 2009 after…							Grade for Maintenance Addressed
			Planned Projects and Line Item Construction (scenario 1)		Planned Projects, Line Item Construction, and 100% of Projected Fee Demo Revenues (scenario 2)		Planned Projects, Line Item Construction, and 55% (or the National Average Going Toward Deferred Maintenance) of Projected Fee Demo Revenues (scenario 3)			
			$	%	$	%	$	%	% of Asset CRV	
Pecos NHP	11,987,225	575,930	366,280	64%	107,820	19%	224,127	39%	2%	C
Hubbell Trading Post NHS	13,960,684	278,049	278,049	100%	16,939	6%	134,438	48%	1%	C
Black Canyon of the Gunnison NP	9,013,289	1,071,734	1,071,734	100%	18,494	2%	492,452	46%	5%	C
Great Sand Dunes NP&Pres	13,427,555	4,170,337	2,715,871	65%	942,106	23%	1,740,300	42%	13%	C
Canyonlands NP	30,538,281	1,250,660	733,886	59%	0	0%	744,014	59%	2%	C-
Craters of the Moon NM	11,321,759	3,599,969	3,242,345	90%	570,639	16%	1,772,906	49%	16%	C-
Rocky Mountain NP	131,231,941	35,738,928	30,807,733	86%	9,962,788	28%	19,343,013	54%	15%	C-
Grand Teton NP	155,077,975	54,214,723	43,050,620	79%	16,742,535	31%	28,581,173	53%	18%	C-
Bighorn Canyon NRA	23,760,529	4,903,605	3,216,313	66%	2,729,883	56%	2,948,776	60%	12%	C-
Colorado NM	20,811,698	4,299,967	3,074,487	72%	2,295,327	53%	2,645,949	62%	13%	D+
Bryce Canyon NP	48,560,996	10,099,364	7,796,190	77%	5,288,859	52%	6,417,158	64%	13%	D+
Curecanti NRA	27,822,086	3,795,165	3,174,991	84%	2,365,855	62%	2,729,966	72%	10%	D+
Arches NP	12,955,561	2,713,102	2,067,902	76%	1,615,116	60%	1,818,870	67%	14%	D+
Fort Union NM	6,458,641	618,744	618,744	100%	348,429	56%	470,070	76%	7%	D+
Natural Bridges NM	8,028,765	409,356	340,982	83%	369,626	90%	356,736	87%	4%	D
Canyon de Chelly NM	12,829,295	631,701	631,701	100%	490,251	78%	553,903	88%	4%	D
Coronado NMem	10,403,368	1,248,591	1,176,591	94%	916,956	73%	1,033,791	83%	10%	D
Organ Pipe Cactus NM	26,324,200	6,280,808	5,913,219	94%	3,933,113	63%	4,824,160	77%	18%	D
Dinosaur NM	41,696,903	22,219,776	14,519,512	65%	13,891,872	63%	14,174,310	64%	34%	D
Great Basin NP	30,501,506	6,625,425	6,453,067	97%	4,776,877	72%	5,531,162	83%	18%	D-
Carlsbad Caverns NP	22,039,079	6,846,860	6,846,860	100%	4,130,925	60%	5,353,095	78%	24%	D-
Bent's Old Fort NHS	21,537,313	2,335,786	2,335,786	100%	2,153,266	92%	2,235,400	96%	10%	D-
Capitol Reef NP	19,401,649	4,275,580	4,174,219	98%	3,374,253	79%	3,734,238	87%	19%	D-
Cedar Breaks NM	4,293,714	990,728	990,728	100%	778,498	79%	874,001	88%	20%	D-
Florissant Fossil Beds NM	3,000,716	1,023,514	989,018	97%	721,463	70%	841,862	82%	28%	F
Mesa Verde NP	111,341,099	30,624,525	29,039,623	95%	25,475,688	83%	27,079,458	88%	24%	F
Golden Spike NHS	9,610,255	2,449,885	2,334,124	95%	2,132,698	87%	2,223,340	91%	23%	F
El Morro NM	5,344,598	2,125,075	1,991,096	94%	1,743,520	82%	1,854,929	87%	35%	F
Hagerman Fossil Beds NM	1,717,690	513,137	513,137	100%	487,622	95%	499,103	97%	29%	F
Petroglyph NM	2,677,530	1,128,382	1,128,382	100%	1,030,687	91%	1,074,649	95%	40%	F
JD Rockefeller, Jr., Mem Pkwy	6,939,068	2,641,104	2,641,104	100%	2,641,104	100%	2,641,104	100%	38%	F
Fossil Butte NM	5,996,131	3,069,323	3,069,323	100%	2,901,748	95%	2,977,156	97%	50%	F
Saguaro NP	21,919,194	56,468,701	55,904,537	99%	53,277,647	94%	54,459,747	96%	248%	F

"Parks deserve attention, funds"
Denver Post 2/20/2005

"Bush fulfilling pledge to fix national parks, report says: Critics say bad air, poor protection are real legacy"
The Gazette 7/3/2003

"Utah park official releases memo urging 'spin' on cuts"
Salt Lake Tribune 3/18/2004 *

"National park chiefs ordered to stay rosy"
Denver Post 5/24/2004

"Park Service police chief fired for talking about funding with press"
High Country News 8/19/2004

2004

"Reports cite budget cuts, reduced services in national parks"
USA Today 3/17/2004 *

"Rescuing the National Parks"
New York Times 5/16/2004

2005

"Administration falls far short of national park needs, report says"
Rocky Mountain News 11/10/2004

Note: many headlines come from the news service Headwaters News, for more information visit www.headwaters.org.

A few other changes in how the National Park Service is conducting business are having profound effects, especially here in the Rocky Mountains. Here's a brief look at these changes.

National Security

It's no secret that a large portion of the park-base funding increases that have occurred during this administration have gone to counter-terrorism efforts. Most of these funds have gone to places like the National Capitol region parks in Washington D.C. and to places like Independence Hall and the Statue of Liberty, national assets we often forget about here in the Rockies. Still, other funds are coming into the Rockies region, most notably to border parks like Organ Pipe Cactus National Monument along the Mexican border and Glacier National Park along the Canadian border for increased border patrol and protection.

While we all agree that protecting our national heritage from terrorist attacks is an important action deserving adequate funding, we ought to think carefully about whether this funding should come from within the Park Service where it inevitably competes dollar for dollar with other park needs, like maintenance, resource protection, and visitor services. Consider that Clinton-era park base increases for environmental monitoring, restoration, and preservation have dropped from about 33% of all increased funds to roughly 4% of park-base increases in recent years, while counter-terrorism park-base increases topped out at 44% percent of all park-based increases during FY 2003. (*Source: NPS Budget Justifications*)

Cultural Resources

As mentioned earlier, the Park Service's current estimate of deferred maintenance levels does not take into account cultural resources. Unlike the physical facilities like waste-water systems that have industry standards for determining their current replacement value and lifecycle, cultural resources have no clearly defined means for estimating the costs to fix or replace them. Ask any archaeologist the value of an intact and treasured one-of-a-kind glimpse into early American settlement, and their response will be simply: priceless. Likewise, each site has a compelling urgency for preservation and restoration that hardly compares to a leaky visitor center roof.

The Park Service has picked the "low-hanging fruit" in attempting to quantify and fix physical facility deferred maintenance. The Service is currently exploring ways to marry information about inventoried archaeological resources into a cost-effective rehabilitation plan, but in the mean time, cultural resources may be left waiting in the wing.

Consider these findings:

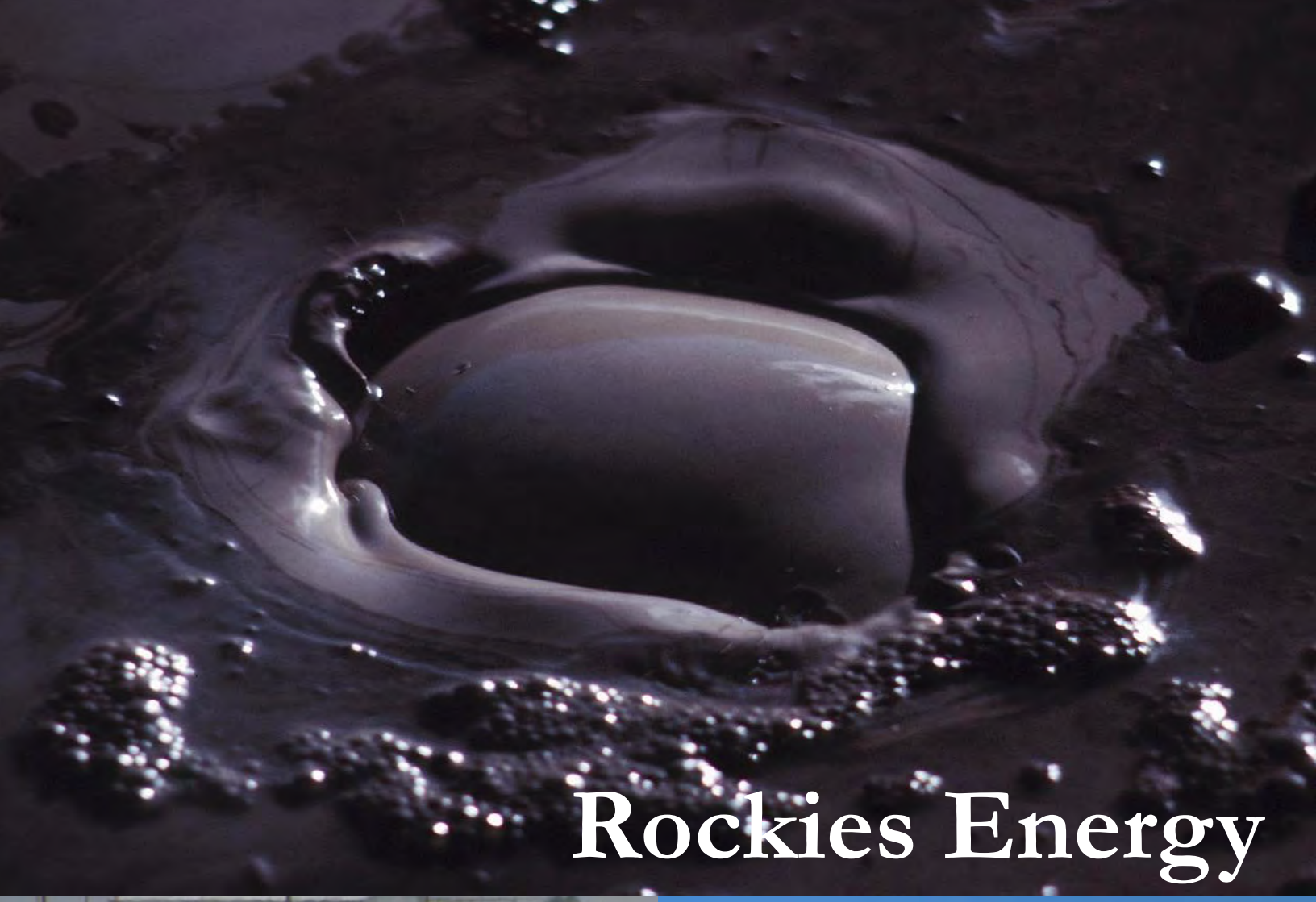
- In FY 2004 the cultural resources cyclical maintenance program was eliminated and joined with the facilities cyclical program, leaving cultural resource preservation largely in the hands of facilities personnel rather than with trained preservationists. $10.4 million earmarked for cultural resource cyclical maintenance can now be diverted to other priority maintenance needs.
- The goal to increase the number of archaeological sites inventoried by 22% since FY 1999 was not met, largely because sites had been destroyed during that time period. (*Source: NPS Budget Justifications*)

Conclusions

In reality, the State of the Rockies Project finds the outlook for our national parks neither particularly rosy nor hopelessly bleak. The initial efforts to adequately manage the deferred maintenance problems have made significant headway in enabling the park service to better understand and respond to ongoing impairment of their human-built assets. However, only 27% of the maintenance backlog here in the Rockies will be alleviated through FY 2009. The government, in our view, can and must provide more funding just to solve the current measured maintenance problems. Further, the NPS should better plan for, and congress should more adequately fund the parks in advance of increasing visitation levels. This will help prevent such large maintenance costs from accruing in the future. Moreover, this should be done nationwide, without preference to certain regions and without funding anti-terrorism by diverting funds from other essential park needs. There are other challenges and changes that the new efforts have made evident. An important and necessary immediate step to improving the health of our National Parks is to begin inventorying and assessing cultural resource assets so that they may adequately compete for funding with physical assets.

Canyonlands National Park: Culture and Counter-terrorism

Canyonlands National Park (Maintenance Backlog grade: C-), renowned for its archaeological resources, has never conducted a full inventory to identify all of them. Three out of every five historic structures are said to be failing,[13] and the park's measured maintenance backlog is estimated at over $1.5 million, with only 59% likely being funded in the next five years. Still, the Park Service has proposed a $61,500 project for fiscal year 2006 under the heading of "Repair Headquarters Security/Gate System - Anti-Terrorism."[14] Look out remote Southern Utah – you could be the site of the next terrorist attack!



Rockies Energy

By Chase Whitney, Bryan Hurlbutt, and F. Patrick Holmes

Futures

"To whom much is given, much is expected": the old adage seems to resonate in the Rockies with regard to energy. Home to vast reserves of both traditional fossil fuel resources and renewable energy potential, the Rockies are emerging as a strategic piece in creating a national energy policy. The energy resources of the Rockies will continue to be developed, but the manner and variety in which they are developed is largely an open question. By evaluating the energy policies set forth by the Bush Administration, the Western Governors' Association, and the Western Resource Advocates, we will explore three different strategies that have been created for exploiting the resources of the Rockies.

These three policies all envision an increase in energy development in the Rockies, but each presents a unique approach to realizing our energy future. The Bush Administration focuses on supply development while quickly referencing renewable energy and conservation; the Western Governors' Association presents a pragmatic approach to fossil fuel development and renewable energy penetration, and the Western Resource Advocates envision a plan of energetic conservation, renewable deployment, and more efficient fossil fuel usage. Each plan makes a call on the Rockies and the West to produce a large amount of additional energy - the differences emerge in the means of production and the legacy that is left behind. By comparing the strategies and taking a quick look at known energy reserves and their potential, we provide an initial framework for assessing current and future energy development in the Rockies.

Removing the Barriers: The Bush-Cheney Energy Plan

A major pillar of the Bush Administration's 2001 National Energy Policy is to increase domestic production of energy, both to supply growing demand and to reduce our nation's dependence on foreign sources of oil and natural gas. According to the administration, to achieve increased domestic production, some protected lands will need to be opened to energy development, selected environmental regulations will have to be relaxed, and the permitting process for oil and gas leases on federal land will need to be streamlined. If these adjustments to current policies and practices are made in full, they will have unique local to regional implications for the Rocky Mountain West.

Forty-six percent of the land in the Rockies belongs to the federal government. As a whole, the region contains nearly 2 billion barrels of proven oil reserves, 186 trillion cubic feet of proven natural gas reserves, and enough coal to keep the US supplied for the next 120 years. No other region in the contiguous United States is equally endowed with traditional energy resources.

Of the forty-six percent of the Rockies that is federally owned, the administration contends that a large portion of the oil and gas resources contained in these lands are currently unavailable or economically undesirable due to regulations. "Much of these potential resources have been placed off-limits or are subject to significant restrictions. For example, about 40 percent of the natural gas resources on federal land in the Rocky Mountain region have been placed off-limits." [1] By using more of a laissez-faire approach with the oil and gas industry, the administration hopes to satiate more of America's energy appetite with American resources.

The goals of limiting dependency on foreign energy and increasing domestic production are objectives with which perhaps the majority would agree, but many also warn that it must be done carefully. Contention arises with regard to the administration's energy policy when the costs of aggressive oil and gas production are weighed against the benefits. Specifically, the oil that could be recovered from the Rockies would do little (100 days of known supply) to shrink America's growing dependence on foreign oil, and the effects on the western landscape could linger much longer than the energy produced. Bruce Driver, executive director of the Western Resource Advocates, equates the administration's policy to exploitation. "Few would disagree that the West must do its share to produce energy resources, but this legislation treats the Rockies like a Third World resource colony." [2]

The magnitude of natural gas located in the Rockies is much more significant than that of oil. The Rockies region is the United States' second largest gas resource, containing known reserves large enough to supply the nation for 8 years. For the last 4 years, the administration has continually cited 40 percent as the amount of natural gas unavailable in the Rockies due to access and production limitations, but in a Department of the Interior, oil and gas resource assessment report released in 2003, only 12 percent of the Rockies' gas was classified as totally off-limits to drilling. Of the lands unavailable for drilling, those designated as wilderness, national parks, national monuments, and roadless areas are the most common. The Interior report concluded that under current environmental legislation and land designation, 63 percent of the gas is available for lease today and without special permitting.

The administration's ability to promote their policy of increased domestic energy production depends on the assertion that these resources are large enough to justify the environmental and social impacts of their development. With the majority of federal lands available for lease, and the unlikelihood of large energy returns coming from protected lands, Westerners should be central in deciding if the economic benefits of this policy outweigh the costs to the Rockies.

The Nation's Energy Storehouse: The Western Governors' Plan

The Western Governors' Association (WGA) created a call to action in 2004 for the Western states to take the lead in creating a clean and diversified energy economy. Guided by the principle of "Enlibra," a term coined by the association symbolizing balance and stewardship, the governors sought to create a policy characterized by the pragmatic use of fossil fuels and the deployment of renewable technology to insulate the region and the nation from price volatility, an unhealthy dependence on foreign energy, and environmental degradation.

During the 2004 North American Energy Summit in Santa Fe, New Mexico, the Western Governors' Association created a list of recommendations that form the foundation for achieving their energy goals. The recommendations clearly identify the contributions fossil fuel resources, renewable resources, and efficiency would make in the future.

"Traditional resources such as oil, natural gas, coal, and hydropower have been and will continue to play a significant role in meeting future energy needs." [3]

The WGA wants to promote production of energy on federal land, while maintaining a full accounting of environmental and social impacts. The WGA states in its goals that it is necessary to increase production of western oil, and at the same time increase efficiency standards to reduce overall demand. Adopted as near-term options for stabilizing oil, the WGA recommends doubling of automobile efficiency standards, creating incentives for hybrid vehicles, and adopting tire efficiency standards in order to achieve a fifteen percent reduction in demand for oil below 2003 levels by 2020. These actions are considered necessary if the West is to accommodate the energy needs of a growing population while accomplishing reasonable protection of the region's resources and lifestyle. In the medium and long-term, the WGA recommends instituting more stringent vehicle fuel efficiency standards, aggressive penetration of hydrogen fuel cell vehicles (20 percent by 2030), and effectively educating citizens about energy choices and their impacts.

Because natural gas is a clean and versatile fuel, the WGA considers gas production and its utilization as key to the Western economy and its eventual shift towards a diverse energy supply. To ensure an ample supply of gas, the WGA recommends new production that will be conducted in an environmentally and economically sound manner. To make the available gas go further, the WGA also recommends that states immediately encourage conservation and higher gas efficiency standards, remove disincentives for utilities to invest in energy efficiency, and encourage utilities to develop more diverse electrical resources, such as gasified coal, advanced nuclear, solar, wind, and geothermal.

Coal is the primary electrical generation fuel in the West, and the WGA recognizes that coal will continue to play a very important role in the future. The association's goal is to supplement the use of coal with an aggressive plan of achieving zero emission coal technology by sequestering the emissions of a coal-fired power plant in a geologic basin such as a depleted oil or gas field.

In conjunction with increasing fossil fuel production and aggressive conservation, the WGA has set forth recommendations to greatly expand the role renewable energy sources play in satisfying the demands of the West. "Our nation's need for energy security provides a market incentive for the West's indigenous resources, from natural gas to wind to biomass (burning organic matter to generate electricity) to solar. The American West – where the wind blows and the sun shines – has the potential to be a major part to our energy solution. We could become the nation's energy storehouse – and the economic impacts could be extraordinary." [4]

By making recommendations to limit greenhouse gas emissions and mandating that 20 percent of the West's electricity come from renewable sources (renewable mandates are usually called Renewable Portfolio Standards –RPS) by 2020, the WGA hopes to position the West as a major contributor to the new energy economy. Also, the WGA has plans to institute an emissions cap-and-trade program with the hope of providing a model for the nation to follow when addressing climate change.

The energy plan envisioned by the Western Governors' Association is western centric and focuses on the Rockies and their unique resources. It complements the Bush Administration's policy of supply development with a genuine focus on renewable development and energy efficiency. The nation depends on energy, and a plan that places a premium on the future and a diversified mix of energy sources best hedges against the risk of supply disruption and crisis.

The Balanced Energy Plan: The Western Resource Advocates

Presented by the nonprofit advocacy group Western Resource Advocates (WRA), "The Balanced Energy Plan for the Interior West" (BEP) is an electrical policy initiative that sets an ambitious agenda for electrical production and consumption in the Rocky Mountain West. In the study, WRA defines the interior west as Arizona, Colorado, Montana, New Mexico, Nevada, Utah, and Wyoming. All figures and predictions apply only to these seven states.

The BEP relies heavily on conservation and efficiency, renewable production, and the utilization of ultra-efficient combined heat and power systems. According to the WRA, during the scope of the analysis, 2002-2020, the BEP would reduce electric cost to consumers by $2 billion annually by 2020, provide equivalent levels of electric system reliability, reduce emissions by 40 percent, and significantly reduce the amount of water consumed by power producers.

WRA's energy plan is presented in contrast with a "business-as-usual" strategy that relies heavily on coal and natural gas to provide the needed electricity of the region. Under the business as usual scenario, the Interior West is estimated to need approximately 30,000 megawatts of additional electric generating capacity by 2020. This is enough electricity to power 5 cities the size of Denver. Assuming aggressive conservation and added efficiency, the WRA plan would reduce electric demand by 30 percent by 2020. The efficiency and conservation measures assumed in the study were deemed cost effective, making them cheaper than purchasing electricity from new generation facilities. These measures include using highly efficient light bulbs, efficient appliances, improved insulation, and energy management systems for industrial settings. In existing homes and buildings, the plan estimated a 4.5 percent annual implementation rate for efficiency improvements, attaining approximately 80 percent penetration by 2020. In new construction, cost effective efficiency measures would be 100 percent installed by 2010. For industrial applications, the WRA plan estimates a 3.5 percent annual adoption of efficiency measures. By 2020, these efficiency measures would save enough electricity to power approximately 1 million homes (assuming 800 kWh per month).

In addition to reducing electric consumption, the WRA plan calls for the installation of 15,410 megawatts of renewable capacity and 3,135 megawatts of combined heat and power capacity. (Combined heat and power projects are facilities that produce both electricity and useful thermal energy in a single integrated system.) In concert with conservation, the installation of this alternative capacity would eliminate the need for nearly all of the additional fossil fuel generation expected under a business as usual scenario, and have a significant and positive impact on the environment, and price stability.

The environmental benefits of implementing the BEP are estimated to be very significant. The WRA says the plan would result in a sharp decline in the amount of sulfur dioxide, nitrogen dioxide, and carbon dioxide released into the atmosphere by the power industry over the 18 years of projected implementation. The plan would also reduce the amount of water used by the industry in cooling traditional power facilities. Projected water savings could amount to 82 billion gallons per year, enough to serve an urban population of 1 million people. The reduced demand for traditional energy sources would also have a tangible impact on western lands by reducing the need to extract fossil fuels.

The estimated cost savings of the BEP is based on what the authors consider conservative energy cost projections and no emissions tax being levied against power generators. If coal and natural gas prices were to climb above the projected amount, or if a carbon tax were passed, the BEP could result in enormous cost saving to consumers. In a worst case scenario, if the price of natural gas would rise 25 percent, hydroelectric output would be hampered by a 20 percent drop in precipitation, and a $20 per ton carbon tax would be imposed on generators, the BEP could save the region $5.3 billion in 2020 alone. Although the chance of all three of these events occurring simultaneously is perhaps low, it does show how vulnerable a homogeneous power supply can be.

The WRA put forward this claim "The Balanced Energy Plan lowers energy costs, manages risk, stabilizes electrical system reliability, and protects public health and the environment." [5] The BEP calls for immediate action to reduce our electrical demand and to increase the diversity of resources from which we generate our electricity. Its bold and forward-looking premise may make it difficult to embrace in totality, but it does remind us of the importance of resource diversity and the added costs of inaction.

Conclusion

Energy is fast becoming a serious political and economic consideration throughout the world. The supply of cheap and abundant energy is currently the cornerstone of a developed economy and a necessary condition for those nations seeking rapid economic growth with existing energy technology. As world demand grows and supply shows signs of decline, the energy future of the US and especially of the Rockies is becoming a critical determinant of what the region's resources and lifestyles will look like in coming decades. The Rockies has both the responsibility and the opportunity to play a significant role in meeting the energy demands of the United States. Blessed with both traditional fossil fuels and enormous renewable potential, the Rockies can and should develop their resources and become the center of innovation, foresight, and economic prosperity.

The following pages provide a detailed overview of U.S. and Rockies energy production, generation, consumption, reserves, and potential. Case studies complement the data profile, providing further insight into many of the issues facing the region.

A Growing Region:
Customers & Capacity

Top 20 Electricity Producing Counties, Installed Capacity per 10,000 Residents

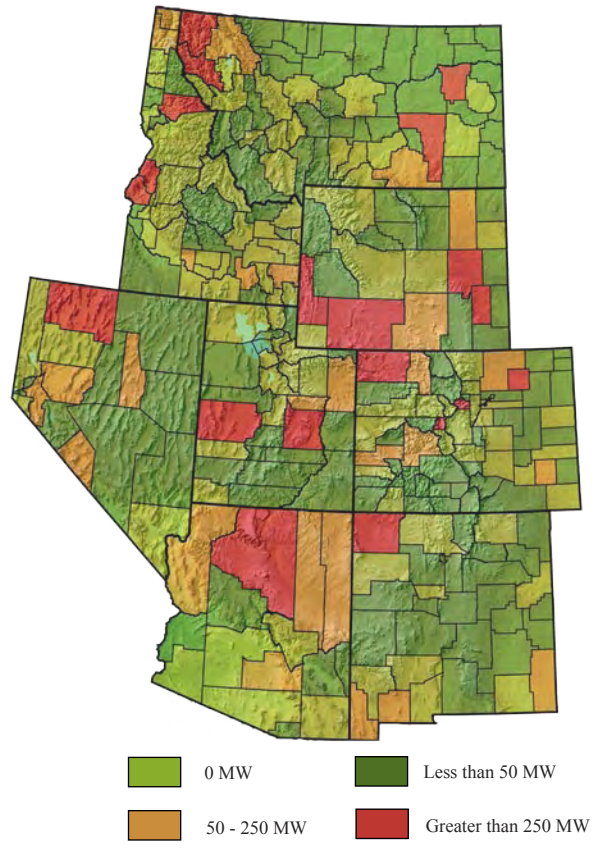
(Source: Penwell MapSearch)

Rank	Area Name	Capacity per 10,000 residents
1	Emery, Utah	1977.569
2	Platte, Wyoming	1935.557
3	Millard, Utah	1335.156
4	Adams, Idaho	1177.881
5	Moffat, Colorado	953.822
6	McCone, Montana	873.478
7	Converse, Wyoming	674.871
8	Washington, Idaho	588.400
9	Sanders, Montana	570.920
10	Sweetwater, Wyoming	569.214
11	Lincoln, Wyoming	494.493
12	Clearwater, Idaho	466.426
13	Rosebud, Montana	446.037
14	Morgan, Colorado	372.371
15	Clear Creek, Colorado	347.136
16	San Juan, New Mexico	340.013
17	Humboldt, Nevada	339.388
18	Coconino, Arizona	303.892
19	Lincoln, Montana	280.883
20	Lake, Colorado	258.653

note: analysis includes only active plants

Installed Electric Production Capacity, MW Per 10,000 Residents by County, 2003

(Source: Penwell MapSearch)



note: analysis includes only active plants

Region (2002 Existing MW Capacity)	Total	Coal	Natural Gas	Dual Fired	Petroleum	Nuclear	Hydro-electric	Other Renewables
The United States (976,619)	25%	2%	221%	46%	-20%	-3%	7%	38%
The Rocky Mountains (53,466)	25%	1%	566%	17%	26%	0%	9%	118%
Arizona (21,531)	30%	1%	1310%	-1%	38%	-0%	8%	*
Colorado (10,169)	44%	-0%	904%	78%	43%	0%	8%	1448%
Idaho (3,291)	38%	43%	*	*	-91%	0%	12%	69%
Nevada (7,487)	41%	-0%	1644%	35%	-41%	0%	2%	52%
New Mexico (6,501)	16%	2%	63%	70%	*	0%	44%	191%
Montana (5,166)	3%	-3%	-100%	-0%	*	0%	9%	-54%
Utah (6,182)	17%	3%	359%	20%	1%	0%	13%	66%
Wyoming (6,743)	8%	3%	292%	*	-47%	0%	11%	1559%

* Had 0 in 1990

Electric Generation Growth Rates, 1990 - 2002:

To meet growing electricity needs in the Rockies, electric generating capacity has grown for every type of power except nuclear since 1990 with the highest percent growth in natural gas and other renewables.

Region	MW Per 10,000 people	MW TOTAL	% Coal	% Natural Gas	% Dual Fired	% Petroleum	% Nuclear	% Hydro-electric	% Other Renewables
The United States	35	976,619	35%	20%	18%	4%	11%	10%	2%
The Rocky Mountains	37	67,069	47%	19%	10%	1%	6%	16%	1%
Arizona	42	21,531	27%	23%	16%	1%	20%	13%	0%
Colorado	24	10,169	50%	28%	7%	2%	0%	11%	1%
Idaho	25	3,291	1%	20%	0%	0%	0%	76%	4%
Montana	57	5,166	48%	0%	1%	2%	0%	48%	0%
Nevada	41	7,487	37%	24%	21%	1%	0%	14%	3%
New Mexico	33	6,501	67%	22%	9%	0%	0%	1%	0%
Utah	28	6,182	79%	15%	1%	1%	0%	4%	1%
Wyoming	137	6,743	90%	3%	0%	0%	0%	4%	2%

Current Electric Generation Capacity, 2002:

Even though coal growth has been low since 1990, the Rockies remains more coal dependent than the US and has potential to develop a much more diverse energy portfolio.

Some states have the capacity to generate more electricity per capita, because they either export power or simply use more power per capita.

Source: Energy Information Administration unless otherwise noted

Customer Growth, 1990 - 2002

As the Rockies' population has grown, so has the demand for electricity.

	Total	Residential	Commercial	Industrial
The United States	21%	20%	26%	13%
The Rocky Mountains	41%	41%	40%	17%
Arizona	46%	48%	41%	17%
Colorado	38%	35%	29%	341%
Idaho	39%	40%	38%	44%
Montana	24%	21%	42%	-79%
Nevada	74%	76%	65%	136%
New Mexico	30%	30%	33%	-71%
Utah	43%	42%	56%	13%
Wyoming	19%	17%	34%	8%

Proposed Additional Capacity from 2003 - 2007:

As of 2002, most proposed electrical expansion in the Rockies and the US was for natural gas; however, growth is currently shifting back towards coal.

	MW Per 10,000 Capita	MW TOTAL	% Coal	% Natural Gas	% Petro-leum	% Nuclear	% Hydro-electric	% Other Renew-ables
The United States	70.5	198,472	4.9%	93.8%	0.5%	0.0%	0.0%	0.7%
The Rocky Mountains	137.8	25,033	3.9%	94.3%	0.0%	0.0%	0.2%	1.6%
Arizona	258.1	13,242	3.4%	96.6%	0.0%	0.0%	0.0%	0.0%
Colorado	38.6	1,662	0.0%	96.8%	0.0%	0.0%	3.2%	0.0%
Idaho	104.0	1,346	0.5%	99.5%	0.0%	0.0%	0.0%	0.0%
Montana	110.3	995	11.7%	88.3%	0.0%	0.0%	0.0%	0.0%
Nevada	204.3	4,082	0.0%	98.9%	0.0%	0.0%	0.0%	1.2%
New Mexico	173.0	3,147	0.0%	93.5%	0.0%	0.0%	0.0%	6.5%
Utah	0.1	2	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Wyoming	113.0	558	73.7%	0.0%	0.0%	0.0%	0.3%	26.1%

The Split Estate: Resource Extraction and Property Rights

As energy development booms in the Rockies, many landowners are being educated on property rights the hard way. As a consequence of history and expansion politics, the same person does not always own both the surface use rights and sub-surface mineral rights to a property. During the days of manifest destiny and the Homestead Act, the United States government transferred huge amounts of public land to private title, but retained the land's mineral rights. This separation of property rights continues to the present and commonly occurs when both mineral rights and surface rights are privately held, but by separate owners. These properties are accurately termed split estates.

Whether owned by the government or privately held, mineral rights are legally dominant over surface rights, and with that authority comes the expected conflict between landowners and energy developers. It is in the full legal right of mineral rights owners to pursue development without the consent of the landowner. Most landowners reach an agreement with a developer and sign a "surface use agreement," which stipulates the compensation the landowner will receive and the environmental requirements to which the developer will be held. Some critics of current practices contend the offered compensation does not adequately reimburse the landowner for damages to their land and reduced property value; but according to the law, developers are not even required to compensate the landowner for access or damages caused to their land. At a minimum, developers must only post a bond with the county government to cover any reclamation costs that may be incurred after the well or other exploratory work is abandoned. Proponents of the status quo argue that private mineral property rights are harmed when surface owners require compensation or government establishes rules and regulations that must be met to access a mineral already owned in the eyes of the law.

The push for increased domestic energy production has hastened the pace of exploration and development in the Rockies. The number of natural gas wells in Garfield County, Colorado, alone is expected to grow 5 fold by the end of the decade. This energy push is causing a significant backlash by individuals and communities throughout the Rockies wanting more rights to be afforded to landowners and surface rights in general. In Colorado and Wyoming, legislation is being considered during 2005 that would give landowners more leverage when negotiating with energy developers. But with many states in the Rockies receiving hundreds of millions of dollars from energy royalties, it may be difficult to find majority support for slowing the energy boom.

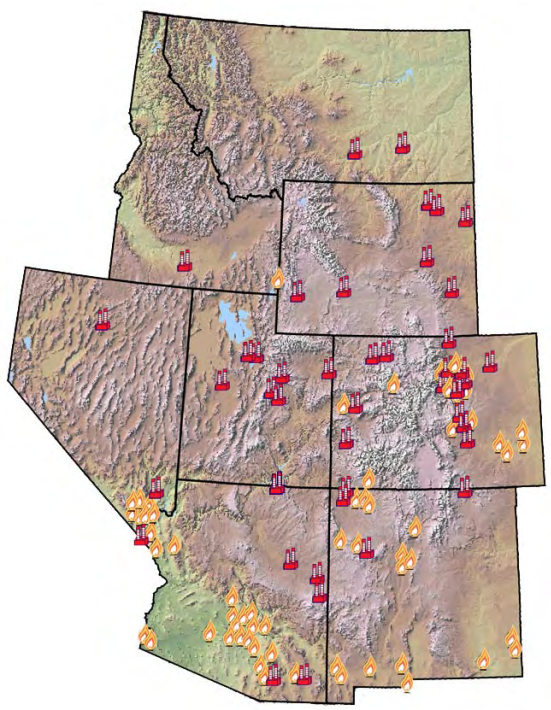
Fossil Fuels:
Extraction & Combustion

Getting the Most Out of Limited Resources - Fossil Fuel Efficiency:

Using the statistical technique for calculating composite scores documented in *the Methods section* each state is ranked on its overall effectiveness at turning fossil fuels into electricity for the three fuels in the table with number 1 being the most efficient.

Fossil Fuel Efficiency 2002	PETROLEUM: MWh Generated Per Thousand Barrels Consumed	COAL: MWh Generated Per Thousand Short Tons Consumed	NATURAL GAS: MWh Generated Per Thousand Mcf Consumed
1. Nevada	520	2082	115
2. Arizona	525	1966	119
3. Utah	560	2204	89
4. New Mexico	566	1770	93
5. Colorado	431	1836	117
6. Wyoming	500	1612	94
7. Idaho	520	1024	68
8. Montana	444	1574	68
The United States	561	1957	113
The Rockies Region	467	1843	113

Coal and Natural Gas Plants in the Rockies



Coal Plants Natural Gas Plants

Power Plant Emissions Efficiency	SO2: Metric Tons Per Thousand MWh		NOX: Metric Tons Per Thousand MWh		CO2: Metric Tons Per MWh	
	2002	% Change from 1990	2002	% Change from 1990	2002	% Change from 1990
1. Arizona	0.69	-61%	0.84	-51%	475	-8%
2. Nevada	1.39	-44%	1.30	-53%	699	-16%
3. Colorado	1.80	-29%	1.57	-61%	887	-5%
4. Idaho	0.46	138%	0.19	171%	75	660%
5. Utah	1.26	43%	1.90	-35%	921	0%
6. New Mexico	1.51	-20%	2.34	-43%	926	-3%
7. Wyoming	1.79	-17%	1.85	-52%	1018	1%
8. Montana	1.60	151%	1.41	-38%	652	7%
The United States	2.58	-47%	1.21	-46%	600	-2%
The Rockies Region	1.28	-25%	1.42	-50%	728	-5%

Power Plant Pollution:

Burning fossil fuels is a dirty process. Thanks to technological advances and pollution standards, emissions have dropped in the Rockies and the US since 1990. Still, pollution from power plants threatens human and environmental health. Using the statistical technique documented in t*he Methods section,* each state is ranked on a combination of its current emissions efficiency as well as its change in emissions efficiency since 1990 for the three pollutants in the table with number one being the most efficient.

Vehicle Fossil Fuel Use:

Although petroleum is burned to generate some electricity (*see* Petroleum Table), it is the dominant source of power for motor vehicles. Using the statistical technique documented *in the Methods section,* each state is ranked on its overall motor vehicle efficiency for the two indicators in the table with number one being the most efficient. A state may be more efficient because it either uses more efficient vehicles or because its residents drive less.

Petroleum	Electricity Generated 2002				Consumed to Generate Electricity 2002		Consumed Total 2000	Production 2000		Proven Reserves 2003	
	As a % of Area's Total Electrical Generation	Thousand MWh	% of Rockies Total	% Increase in MWh since 1990	Thousand Barrels	% of Rockies Total	Thousand Barrels	Thousand Barrels	% of Rockies Total	Thousand Barrels	% of Rockies Total
The United States	2.45%	94,567	-	-25%	168,597	-	7,171,778	2,801,000	-	21,891,000	-
The Rockies Region	0.22%	703	-	12%	1,505	-	411,451	389,000	-	1,947,000	-
-Montana	1.84%	470	67%	1521%	1,058	70%	30,276	15,000	4%	315,000	16%
-Utah	0.15%	54	8%	3%	96	6%	47,939	76,000	20%	221,000	11%
-New Mexico	0.11%	33	5%	-7%	59	4%	47,126	141,000	36%	677,000	35%
-Wyoming	0.09%	40	6%	-18%	80	5%	28,064	116,000	30%	517,000	27%
-Nevada	0.08%	25	4%	-91%	49	3%	45,867	-	0%	-	0%
-Arizona	0.06%	57	8%	-62%	109	7%	96,789	-	0%	-	0%
-Colorado	0.05%	23	3%	-15%	54	4%	86,814	41,000	11%	217,000	11%
-Idaho	0.00%	0	0%	-93%	0	0%	28,576	-	0%	-	0%

Petroleum:

While petroleum is not a major source of electrical generation in the Rockies, it is the main source of motor vehicle fuel for the world.

Source: Energy Information Administration unless otherwise noted, petroleum and natural gas reserves and production from the Independent Petroleum Association of America

Natural Gas	Electricity Generated 2002				Consumed to Generate Electricity (2002)		Produced 2000 Total		Proven Reserves 2000	
	As a % of Area's Total Electrical Generation	Thousand MWh	% of Rockies Total	% Increase in MWh since 1990	Billion Cubic Feet	% of Rockies Total	Billion Cubic Feet	% of Rockies Total	Billion Cubic Feet	% of Rockies Total
The United States	18%	691,006	-	85%	6,126	-	39,381	-	363,937	-
The Rockies Region	14%	44,413	-	388%	394	-	7,488	-	100,951	-
-Nevada	38%	12,211	27%	451%	106	27%	0	0%	0	0%
-Colorado	20%	9,028	20%	600%	77	20%	1,548	21%	21,265	21%
-Arizona	18%	17,293	39%	641%	145	37%	0	0%	0	0%
-New Mexico	11%	3,442	8%	26%	37	9%	3,131	42%	35,832	35%
-Utah	4%	1,380	3%	842%	16	4%	464	6%	8,708	9%
-Idaho	3%	329	1%	490%	5	1%	0	0%	0	0%
-Wyoming	2%	713	2%	166%	8	2%	2,210	30%	33,369	33%
-Montana	0%	17	0%	-70%	0	0%	135	2%	1,777	2%

Natural Gas:

Due to its abundance and clean burning, natural gas use increased substantially in the Rockies since 1990. As a result, natural gas prices jumped, and energy developers have shifted attention toward other energy resources.

Coal	Electricity Generated 2002			Consumed to Generate Electricity: 2002		Produced 2000		Proven Recoverable Reserves 2003	
	As a % of Area's Total Electrical Generation	Thousand MWh	% Increase in MWh since 1990	Thousand Short Tons	% of Rockies Total	Thousand Short Tons	% of Rockies Total	Thousand Short Tons	% of Rockies Total
The United States	50%	1,933,130	21%	987,583	-	1,071,753	-		-
The Rockies Region	66%	208,770	11%	113,290	-	510,612	-		-
-Wyoming	96%	41,923	8%	26,001	23%	376,270	74%	6,707,000	67%
-Utah	94%	34,488	9%	15,650	14%	23,069	5%	331,000	3%
-New Mexico	88%	26,903	4%	15,197	13%	26,389	5%	1,351,000	13%
-Colorado	78%	35,388	19%	19,279	17%	35,831	7%	427,000	4%
-Montana	60%	15,338	1%	9,746	9%	36,994	7%	1,197,000	12%
-Nevada	51%	16,413	9%	7,885	7%	0	0%	-	0%
-Arizona	41%	38,227	20%	19,442	17%	12,059	2%	-	-
-Idaho	1%	91	104%	89	0%	0	0%	-	0%

Coal:

Also abundant in the Rockies, yet notorious for being dirty, coal is making a comeback. Many energy developers are calling coal today's most cost-effective energy supply and argue that improvements in pollution prevention technology make coal environmentally adequate, yet others are still very concerned about its impact on human and environmental health.

Motor Vehicle Efficiency	Estimated Number of Alternative-Fueled Vehicles in Use 2002 per 1,000 Residents	Motor Gas Consumption: Barrels Per Capita 2002
1. Utah	3.27	10.3
2. New Mexico	3.57	11.9
3. Nevada	3.06	11.4
4. Colorado	3.04	11.5
5. Idaho	2.54	11.7
6. Arizona	2.38	11.4
7. Montana	2.37	12.9
8. Wyoming	2.85	16.4
The United States	1.84	11.2
The Rockies Region	2.86	11.6

Xcel Energy's Colorado Coal Expansion: Coloradoans Work Together to Carve Out Plan

Surging prices and unstable supplies of natural gas coupled with a loosening regulatory environment in Washington, D.C. have energy developers turning back to coal to meet the country's growing electricity needs. At the end of 2003, there were 40 proposals on the table for new or expanded coal-fired power plants from Montana to Arizona. But some customers and environmentalists argue that coal is a thing of the past, not part of the economically sound, clean future. In Colorado, where Xcel Energy was moving forward with plans to expand its coal power operations in Pueblo with a 750 MW generating unit, an unprecedented number of concerned groups and individuals got involved in the planning process and worked with the company to make the most of the situation and craft a modified plan with something for everyone involved.

Xcel Energy gets to go ahead with constructing the new $1.35 billion coal plant as part of its least-cost resource plan to add 3,600 MW of capacity to meet the Front Range's electricity needs by 2013 without further opposition from the involved parties. Xcel also gets to raise rates to protect its credit ratings. Consumers capped construction costs and ensured they will not have to pay for the plant until it is up and running. Environmentalists persuaded Xcel to consider global warming costs, invest $196 million to cut peak demand 320 MW by 2013, subsidize energy-saving appliances, install pollution prevention equipment at both the new plant and the 2 existing Pueblo plants to reduce net sulfur dioxide and nitrogen oxide emissions even with the expansion, develop 890 MW of renewable energy capacity by 2013, and speed up a study on the viability of expanding wind power operations to make up 15% of Xcel's Colorado capacity.

Still, some are upset that the Colorado Public Utilities Commission, which approved the plan, tends to lean pro Xcel and may not have approved the best option, since Xcel was exempted from the competitive bidding process normally required when building large plants. Consumers are concerned rates will go up and that only a small portion of ratepayers, around 4%, will benefit from energy efficiency subsidies. Environmentalists point out the plant will still be a major source of harmful pollution and that in its home state of Minnesota, Xcel saves three times as much energy through efficiency programs than it will in Colorado.

Nuclear and Renewables: Other Generation Options

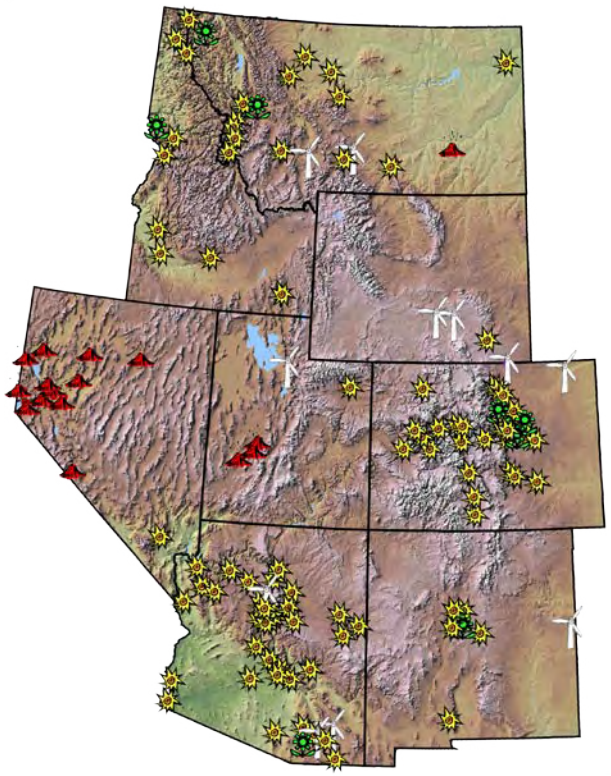
Hydroelectric:

Though water is not plentiful in the Rockies, there is enough elevation change throughout the region to make hydroelectric power a significant contributor to electric generation. However, many of the good spots have already been used, and building dams is a huge undertaking. Plus, the environmental impact of hydroelectric dams has become a major concern. These plants are 'clean,' but they disrupt natural habitats.

Hydroelectric	Electricity Generated (2002)			
	As a % of Area's Total Electical Generation	Thousand MWh	% of Rockies Total	% Increase in MWh since 1990
The United States	7%	255,586	-	-12%
The Rockies Region	10%	30,450	-	-5%
-Idaho	90%	8,769	29%	-4%
-Montana	38%	9,567	31%	-11%
-Arizona	8%	7,551	25%	-2%
-Nevada	7%	2,268	7%	31%
-Colorado	2%	989	3%	-29%
-Wyoming	1%	584	2%	-9%
-Utah	1%	458	2%	-10%
-New Mexico	1%	265	1%	29%

Renewable Energy Generation in the Rockies

(hydro not shown)



Solar Wind Geothermal Biomass

State Financial Incentives for Renewable Energy

State Renewable Policies	Total Financial Incentives	Financial Incentives									
		Personal Tax Incentives	Corporate Tax Incentives	Sales Tax Exemption Incentives	Property Tax Incentives	Rebate Programs	Grant Programs	Loan Programs	Industry Recruitment Programs	Leasing/Lease Purchase Programs	Production Incentives
The United States	176	20	21	16	31	17	35	20	10	-	6
The Rockies Region	26	6	5	4	3	2	3	2	-	-	1
-Montana	7	2	3	-	1	-	-	1	-	-	-
-Nevada	5	-	-	1	2	1	-	-	-	-	1
-Arizona	3	2	-	1	-	-	-	-	-	-	-
-New Mexico	3	-	1	-	-	-	2	-	-	-	-
-Utah	3	1	1	1	-	-	-	-	-	-	-
-Wyoming	2	-	-	1	-	-	1	-	-	-	-
-Idaho	2	1	-	-	-	-	-	1	-	-	-
-Colorado	1	-	-	-	-	1	-	-	-	-	-

Nuclear	Electricity Generated (2002)			
	As % of Area's Total Electrical Generation	Thousand MWh	% of Rockies Total	% Increase in MWh since 1990
The United States	20%	780,064	-	35%
The Rockies Region	10%	30,862	-	50%
-Arizona	33%	30,862	100%	50%
-Colorado	0%	0	0%	0%
-Idaho	0%	0	0%	0%
-Montana	0%	0	0%	0%
-Nevada	0%	0	0%	0%
-New Mexico	0%	0	0%	0%
-Utah	0%	0	0%	0%
-Wyoming	0%	0	0%	0%

State Renewable Policies	Total Rules, Regs, and Policies	Rules, Regulations, and Policies											
		Public Benefits Funds	Generation Disclosure Rules	Renewables Portfolio Standard	Net Metering Rules	Interconnection Standards	Line Extension Analysis Requirements	Contractor Licensing Requirements	Equipment Certification Requirements	Solar Access Laws/ Guidelines	Construction & Design Policies	Green Power Purchasing/ Aggregation Programs	Mandatory Utility Green Power Option
The United States	200	15	24	20	34	34	4	8	6	34	8	8	5
The Rockies Region	38	1	4	4	6	5	3	3	1	7	2	-	2
-Nevada	7	-	1	1	1	1	-	1	-	1	1	-	-
-Arizona	7	-	1	1	-	-	1	1	1	1	1	-	-
-Montana	6	1	1	-	1	1	-	-	-	1	-	-	1
-New Mexico	6	-	-	1	1	1	1	-	-	1	-	-	1
-Colorado	5	-	1	1	1	-	1	-	-	1	-	-	-
-Utah	4	-	-	-	1	1	-	1	-	1	-	-	-
-Wyoming	2	-	-	-	1	1	-	-	-	-	-	-	-
-Idaho	1	-	-	-	-	-	-	-	-	1	-	-	-

State Renewable Energy Incentives

Some states offer a variety of incentives in the form of either rules, regulations, and policies or financial incentives. Visit www.dsireusa.org for definitions of the different state incentives as well as info on federal, local, and utility incentives.

Source: Renewable generation, hydro generation, and nuclear generation data all from the Energy Information Administration , all other data from www.energyatlas.org unless otherwise noted

Renewable Energy Exisiting Capacity in the Rockies

Installed Renewable Capacity	Total MW	Wind MW	Solar MW	Geothermal MW	Biomass MW
The Rockies Region	639.1	203.48	5.23	277.1	153.3
-Nevada	237.9	0.00	0.08	237.8	0.0
-Wyoming	140.7	140.64	0.05	0	0.0
-Idaho	119.7	0.00	0.12	0	119.6
-Colorado	67.9	61.00	0.76	0	6.1
-Utah	43.5	0.24	0.00	39.3	4.0
-Montana	16.3	0.24	0.03	0	16.1
-Arizona	9.4	0.04	4.08	0	5.3
-New Mexico	3.6	1.32	0.11	0	2.2

Renewable Electic Generating Potential (Million MWh/year)	Total	Wind	Solar	Geothermal	Biomass
The Rockies Region	3,439	2,692	683	42	22
-Montana	1,127	1,020	101	n/a	6
-Wyoming	955	883	72	n/a	0
-Colorado	688	601	83	0	4
-Nevada	169	55	93	20	1
-New Mexico	163	56	104	3	0
-Idaho	123	49	60	5	9
-Arizona	112	5	101	5	1
-Utah	102	23	69	9	1

Renewable Generation:

Renewables (minus hydro-electric) do not make up a major portion of the Rockies' energy mix but may in the future as renewables are a clean and abundant source of energy that are advancing technologically and can be used to develop a more diverse energy portfolio.

Renewables	Electricity Generated (2002)			
	As a % of Area's Total Electrical Generation	Thousand MWh	% of Rockies Total	% Increase in MWh since 1990
The United States	2%	86,922	-	35%
The Rockies Region	1%	2,705	-	66%
-Idaho	5%	508	19%	24%
-Nevada	4%	1,127	42%	48%
-Wyoming	1%	447	17%	787%
-Utah	1%	229	8%	51%
-Colorado	0%	169	6%	482%
-Montana	0%	63	2%	-42%
-Arizona	0%	142	5%	31%
-New Mexico	0%	19	1%	37%

Renewable Potential:

From the windy eastern plains to the sunny Southwest to volcanically active Yellowstone to Idaho's farm and timber lands, the Rockies has a vast supply of wind, solar, geothermal, and biomass energy.

Nuclear:

Nuclear energy is a powerful source of electricity, but as of yet there is no good plan for dealing with radioactive waste. And nuclear energy has widespread opposition in the Rockies, where the country continues to try to store its nuclear waste.

Colorado's Amendment 37: Renewable Energy Portfolio Standard

A renewable energy portfolio standard (RPS) is public policy ensuring that a minimum amount of renewable energy is incorporated into the portfolio of electric resources that serves a utility region, state, or country. An RPS provides a framework for renewable energy resources, like wind, solar, hydro, and biomass to contribute to electric supply.

Colorado's Amendment 37 is unique in the world of renewable energy portfolio standards. Of the 18 states in the US that have an RPS, Colorado's Amendment 37 is the only RPS adopted by popular vote. It is not an amendment to the state Constitution, but rather an amendment to the Colorado Revised Statutes and can be changed or abolished by a simple majority vote in the Colorado Legislature. Amendment 37 was placed on the 2004 ballot after similar measures failed to pass the state legislature on three different occasions.

Amendment 37 stipulates that all utilities in Colorado with a service population of greater than 40,000 customers must generate or purchase at least 10 percent of their electricity from renewable sources (wind, biomass, small hydro < 10 megawatts, fuel cells, and solar) by 2015. A further stipulation is that four percent of the mandated renewable energy or 0.4 percent of total electrical generation must come from solar generation.

The impacts that Amendment 37 will have on Colorado are not known for certain, but according to a study conducted by the Union of Concerned Scientists, Amendment 37 will be good for both Colorado's economy and environment. In the study, 80 percent of electric sales in the state will be immediately covered by the standard, with an additional 10 percent coming under the standard in the next 20 years. Of course, opponents argue that this step will basically raise energy costs to consumers and businesses, an unwise step as Colorado's economy recovers from the recession.

The amendment provides an in-state multiplier that allows each kilowatt-hour of renewable electricity generated in the state to count as 1.25 kilowatt-hours towards meeting the RPS mandate. It is assumed that this multiplier will provide a large enough incentive for 100 percent of renewable energy used to meet the standard to come from Colorado sources. This incentive would effectively reduce the renewable standard from 10 percent to 7.9 percent of electricity sales by 2015.

If the Union's projections are correct, Amendment 37 will increase renewable generation in Colorado from approximately 230 megawatts currently to 1300 megawatts by 2015. Proponents also argue that the amendment will create 2000 new jobs and reduce energy costs to Colorado consumers by $236 million by 2025.

The Toxic

By Bryan Hurlbutt
with assistance from Caitlin O'Brady

At the inaugural Colorado College State of the Rockies Conference in May 2004, speaker Ed Marston—former editor of *High Country News* — posed a resounding question continually revisited throughout the conference by speakers and attendees: to what degree does the West control its own destiny, and to what degree is that destiny ruled by the 'colonial power' of the greater United States? As Ed writes in his Challenge Essay "Home and Hope in the Rockies" for the 2004 Rockies Report Card:

> "The West suffers not just from the actions imposed on it by force majeure, but also the loss of morale that comes from being the roadkill of national politics and national economics. Does the nation need to get rid of radioactive waste? Does it need to base missiles somewhere? Does it need 5,000 square miles of airspace so that Top Guns can practice bombing and dog fighting? Are we short of oil or natural gas? Do we need space for recreation? Or for Solitude? Eyes turn West." [1]

Rockies

Ed touched on a harsh reality of United States' history. The nation—from government to business to citizen—takes what it wants from the Rockies and leaves behind what it wants nothing to do with. The greater U.S. gets lumber, gold, and vacation homes from the region and leaves behind piles of hazardous waste, weapons-testing craters, and cold-bed communities.

Surely, some jobs are garnered and money is left behind as well, but it's still a raw deal. These incidents have threatened the Rockies' landscape, environment, and sense of freedom that make the region such a unique and spectacular part of the country. The high concentration of the nation's nuclear activity in the Rockies is a clear and popular example of just how raw these deals can be.

Of the 1,149 total nuclear detonations conducted by the US from 1945-1992, 1,035, or 90% of them, took place in the Rockies: mostly at the Nevada Test Site but also in Colorado, New Mexico, and other parts of Nevada.[2] Little was understood then about the full dangers of the nuclear explosions that scarred the immediate landscape and covered nearby and distant lands with radiation as radioactive fallout spewed many miles downwind. It took a long struggle for many victims to receive compensation for radiation-related health problems, and in Idaho many are still fighting.

Currently, the nuclear spotlight is focused on Yucca Mountain, Nevada, where the federal government is trying to ship and store all of the nation's spent nuclear fuel and high-level nuclear waste. Without what some consider a full scientific understanding of long-term waste disposal, the federal government is hurrying to relocate all of the nation's most hazardous nuclear waste to the Rockies as current storage facilities around the country rapidly approach maximum capacity. Not only are nearby residents concerned with the Yucca Mountain plan, but so are people scattered across the Rockies living in communities through which tons of nuclear waste would have to be shipped.

Here at the Rockies Project we value our speakers' ideas and decided to look into a less readily apparent issue than the nuclear testing and disposal conundrum: that of dealing with the apparently inequitable dumping and disposal of hazardous substances in the US and our eight-state Rocky Mountain Region—industrial and federal facility toxic pollution.

Tens of thousands of industrial and federal facilities, from pit mines to coal-burning power plants to food-processing facilities, release tens of millions of pounds of toxic pollution into the environment across the country every day. Toxic pollution can be extremely harmful to humans and the environment and can lead to expensive government-mandated cleanup.

From gray clouds spewed from the smokestacks of an industrial city to the gaping wound of a hillside pit mine in the remote desert, sources of toxic pollution come in many familiar forms. But it is difficult to estimate how much toxic pollution actually occurs in a given region and to what extent it impacts human and environmental health in that region and elsewhere.

It is often assumed that the Rockies, with its relatively sparse population, few large cities, and low number of manufacturing facilities, is exposed to less industrial/federal facility pollution than the rest of the country. It also seems reasonable that the vast Rockies easily dilutes pollution. However, as this report shows, an inequitably high share of industrial/federal toxic pollution is released to the Rockies' environment, and many parts of the Rockies are failing to meet EPA pollution standards. For example, 14 percent of the Rockies' counties failed to meet federal air quality attainment standards for one or more of the six criteria pollutants in 2004, and 11 of those counties were in non-attainment for more than one criteria pollutant. In 72 Rockies counties, more than 10 percent of water bodies are threatened or impaired according to the EPA. There are currently 86 Superfund sites in the Rockies, which are highly toxic areas in need of major cleanup (*See* **Figures 1-3**).

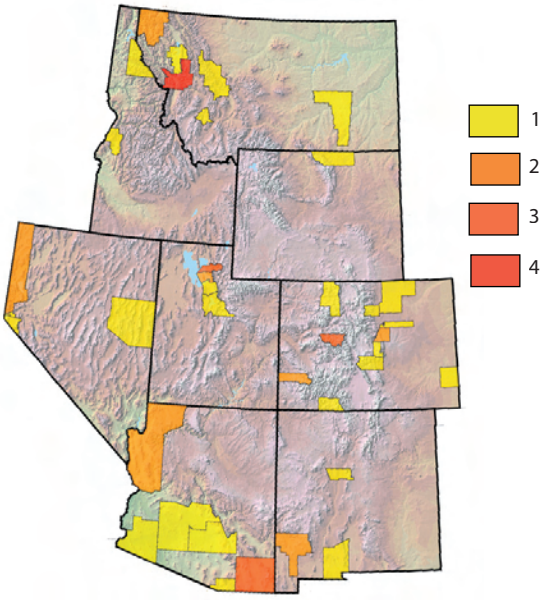
It is a little less clear who, in this case, can be blamed. In some instances, an industrial/federal facility may be irresponsibly polluting with little regard to local concerns. Or the facilities operations may be so huge that, although it uses the best pollution prevention technology available, it still pollutes its surroundings too much. In other cases, the federal, state, and/or local government may be too lax in setting pollution standards

and in regulating polluters. Or it could be that communities are allowing excessive pollution in exchange for jobs and economic prosperity. It may just be that no one is paying attention to the issue. But whatever the situation is, community residents are supposed to have some say.

In 1986 under the Emergency Planning and Community Right-to-Know Act, the EPA created a publicly accessible database of industrial and federal facility toxic pollution called the Toxics Release Inventory (TRI). Some argue the EPA program generously empowers citizens with the ability to keep a tab on industrial pollution and the environment. Others argue that the EPA simply wanted to shed regulatory responsibility without any concern for the program's effectiveness. Either way, the EPA equipped citizens with information for identifying and pressuring notable polluters and the government—giving them some degree of power and say. The EPA claims that since the TRI has been available, the releases of TRI chemicals by facilities reporting since the program began has decreased 49 percent, and they attribute part of that reduction to the influence of citizens on both polluters and the government. [3]

The following piece — "The Toxic Rockies" — takes a more focused look at the question of whether there is a toxic inequity in the Rockies, whose origins and explanation are summarized above. Our analysis leads to the conclusion that indeed inequities of major proportions exist towards and in the Rockies. First, we lay out the details of the inequity between the Rockies and the United States and touch on its environmental impact. Then, our county-level industrial/federal facility toxic pollution analysis—broken down by air, water, and land pollution with supplemental sections on agriculture and toxic threat—serves as an initial framework for targeting possible areas of concern. It's up to you, the Rockies citizens, to take the next steps. You may conclude that the tradeoff of jobs for waste is acceptable, indeed essential. Or you may decide that the very essence of the Rockies is being abused and harmed in ways that will destroy the unique features of the region. Regardless of your perspective, we urge you to investigate further and thus help take control of this vital aspect of the Rockies Region's destiny.

Figure 1. Counties in Non-attainment for 1 to 4 Criteria Air Pollutants in 2004 [4]



The Toxics Release Inventory

The Environmental Protection Agency (EPA) is mandated by law to provide a publicly accessible database on the yearly management details of over 600 toxic chemicals released by around 25,000 industrial and federal facilities in the United States. The Toxics Release Inventory is accessible at www.epa.gov/tri.

The TRI has drawbacks as a toxic pollution accountability tool and as an indicator of toxic threat to humans and the environment. Facilities are only required to report estimates of toxic releases. The dangers associated with toxic releases vary by chemical, manner released, and natural setting into which they are released, which are not directly assessed by the TRI. And only facilities meeting three EPA criteria are required to report. Facilities must:

- -employ 10 or more full-time-equivalent employees,
- -manufacture or process more than 25,000 pounds or otherwise use 10,000 pounds of any listed chemical during the year,
- -be a federal facility or a non-federal facility operating within certain industry sectors inculuding metal mining, coal mining, food, lumber, paper, chemicals, petroleum, plastics, primary metals, fabricated metal products, electric utilities, RCRA/solvent recovery, and about 18 other industry sectors.

Nonetheless, the TRI is still a valuable tool with a wealth of information for identifying noteworthy sources of toxic pollution.

Evaluating Toxic Releases in the Rockies

Of all toxic waste managed, only some is actually released directly into the environment. It can also be recycled, burned for energy recovery, or treated. Although these methods still have potential for toxic problems, they are not nearly as direct a threat as toxic chemicals emitted to the air, discharged to surface water, and released to the land. "The Toxic Rockies" uses these toxic "releases" in its analysis.

This Rockies Project report uses TRI data from 1998 through 2002. The 2002 data, released in June of 2004, is the most recent data available. A controversial federal court decision that exempts the mining industry from reporting the movement of unprocessed waste rock took effect for the 2002 reporting year. This had a very noticeable impact on the 2002 numbers, and it is debatable as to whether or not the reclassification was warranted. So our analysis looks at pounds released in 2002 as well as the 1998-2001 multi-year average to factor in both reporting methods as well as to account for inconsistency from year-to-year. The analysis also factors in the change in both pounds and percent released from the 1998-2001 average to 2002 to detect improvement. When computing the county rankings, half the weight of our score for each county is given to the 2002 releases, one quarter is given to the 1998-2001 average, and one quarter is given to the change between the two time periods.

This report assesses the release of all toxic chemicals as well as the release of five different groups of toxic chemicals to account for the fact that different types of chemicals are dangerous in different quantities. When computing the county rankings, half the weight is given to All Toxic Chemicals and the other half is divided equally among the other five chemical groups:

- All Toxic Chemicals (or 'All Toxics') includes all 600+ TRI chemicals. These are chemicals known or suspected to be harmful to humans in certain quantities according to the EPA.
- Hazardous Air Pollutants (or 'HAPs') consists of 188 chemicals, including chlorine and asbestos, and are known or suspected to cause serious health problems such as cancer.
- Dioxin and Dioxin-like Chemicals (or 'Dioxin') refers to chlorinated dibenzo-p-dioxins (CDDs), chlorinated dibenzofurans (CDFs) and certain polychlorinated biphenyls (PCBs). Studies have shown that even low-level exposure to dioxins may cause a number of adverse health effects.
- Persistent and Bioaccumulative Toxic Chemicals (or 'PBTs') are toxic chemicals that persist and accumulate in the environment and pose significant health and environmental concerns, including mercury, PCBs, and some pesticides.
- Metals and Metal Compounds (or 'Metals') include toxic chemicals like lead, to which people are commonly overexposed, and mercury, which causes nervous system and kidney damage.
- OSHA Carcinogens (or 'Carcinogens' throughout the report) include toxic chemicals that cause increased incidence of benign or malignant tumors as decided by the Occupational Safety and Health Administration.

Some toxic chemicals fall into more than one or no chemical group, so the sum of released HAPs, Metals, Carcinogens, PBTs, and Dioxin may be greater than or less than the release of All Toxic Chemicals.

The county-level analysis divides the counties into Metropolitan and Non-metropolitan as defined by the Office of Management and Budget. Metro counties have an aggregate urban population of 50,000+ or are adjacent to these counties and linked through commuting trends. Though these divisions do not perfectly group similar counties, they do split the counties into more reasonable groups for comparison. Most of the analysis looks at toxic releases per square mile of the geographic area (county, state, region) in which they are released to get the concentration of toxic releases in the area and thus to make areas of different sizes comparable.

Figure 2. Percent of County Water Bodies Threatened or Impaired in 2002 [5]

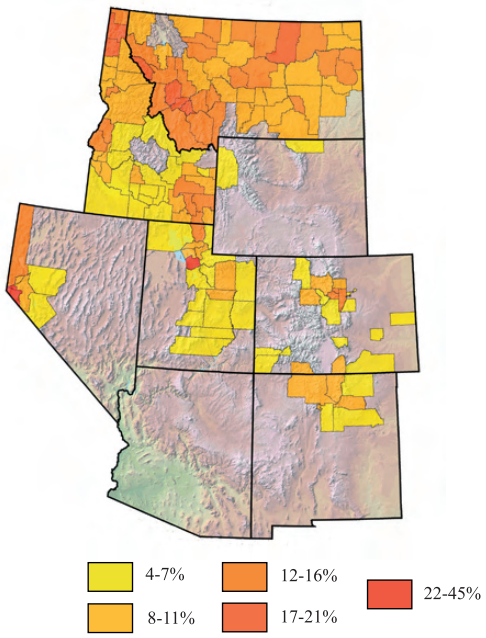
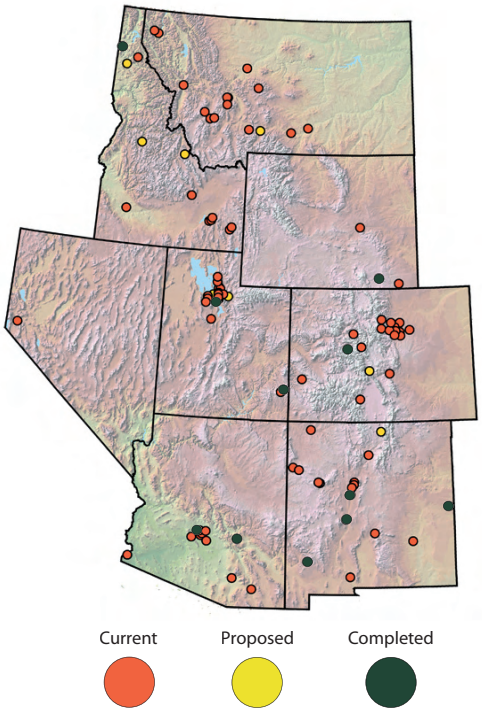


Figure 3. Superfund Sites [6]



Initial Findings

The Rockies releases a higher percent of its managed toxic waste to the environment and releases more pounds per capita to the environment than does the U.S. as a whole (*See* **Figures 4 & 5**). But is this necessarily worthy of concern? It may be that the vast, sparsely populated Rockies can handle an extra share of the country's toxic releases. However, it turns out that more pounds of toxic chemicals are released to the Rockies' environment per square mile than in the whole United States, meaning toxic pollution is more concentrated in the Rockies than in the entire United States (*See* **Table 1**).

In 2002 as well as on average from 1998-2001, the Rockies released more of each chemical group except dioxin per square mile than did the US (*See* **Table 1**).

Looking at the industrial breakdown of toxic pollution in the Rockies and the United States reveals some notable differences that may contribute to the discrepancy. In the Rockies, 63% of total toxic releases come from the metal mining industry, whereas only 30% of US releases come from metal mining. Only 3% of the Rockies releases come from electric utilities, but in the US electric utilities make up 24% of all releases (*See* **Table 2**).

Looking at total releases in the Rockies states, Nevada released the most toxic chemicals to the environment in 2002 per square mile, and 98% of those releases came from the metal mining industry. Arizona, where only 11% of releases came from metal mining and 86% came from primary metals, released the next most. Utah was next, where 66% of releases came from metal mining and 25% from primary metals. All three of these states released more pounds of toxic chemicals to the environment per square mile in 2002 and on average from 1998-2001 than did either the United States or the Rockies Region (*See* **Table 1**).

Figure 4. Percent of Managed Toxics Released to the Environment

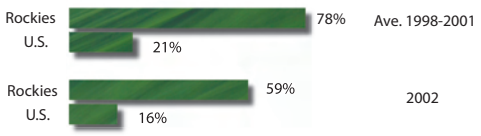


Figure 5. Pounds of Toxics Released to the Environment Per Capita

Table 1. Toxic Releases Per Square Mile

	All Toxics		HAPs		Metals		Carcinogens		PBTs		Dioxin	
	2002	Ave. '98-01	2002	Ave. '98-01	2002	Ave. '98-01	2002	Ave. '98-01	2002	Ave. '00-01	2002	Ave. '00-01
United States	1,112	1,620	636	783	569	982	263	318	99	54	17.8	20.5
The Rocky Mountains	1,285	3,177	749	1,234	1,205	3,052	596	852	126	108	3.7	3.5
-Arizona	2,883	7,411	790	415	2,846	7,362	215	197	101	50	0.1	0.1
-Colorado	204	260	86	141	125	191	57	28	53	39	0.3	0.2
-Idaho	752	1,133	252	503	622	949	95	192	54	42	5.3	5.7
-Montana	219	731	80	178	186	687	48	125	38	39	0.1	0.2
-Nevada	4,195	9,679	3,928	6,460	4,116	9,591	3,709	5,071	265	205	0.1	0.1
-New Mexico	89	1,345	19	432	78	1,330	10	122	6	29	0.0	0.1
-Utah	2,040	4,905	897	1,954	1,778	4,304	676	1,178	605	562	31.2	28.4
-Wyoming	173	197	22	39	84	90	6	7	2	1	0.1	0.1
	----------Pounds----------										Milligrams	

Table 2. Industry Composition of 2002 All Toxics Total Releases

2002 All Toxics: Releases to the Environment	US	Rockies
Metal Mining	30%	60%
Electric Utilities	24%	4%
Chemicals	12%	1%
Primary Metals	11%	29%
RCRA/Solvent Recovery	3%	4%
Food	3%	1%
Coal Mining	0%	1%

Table 4. Industry Share 2002 All Toxic Air Releases

Source: All data from the Toxics Release Inventory unless otherwise noted

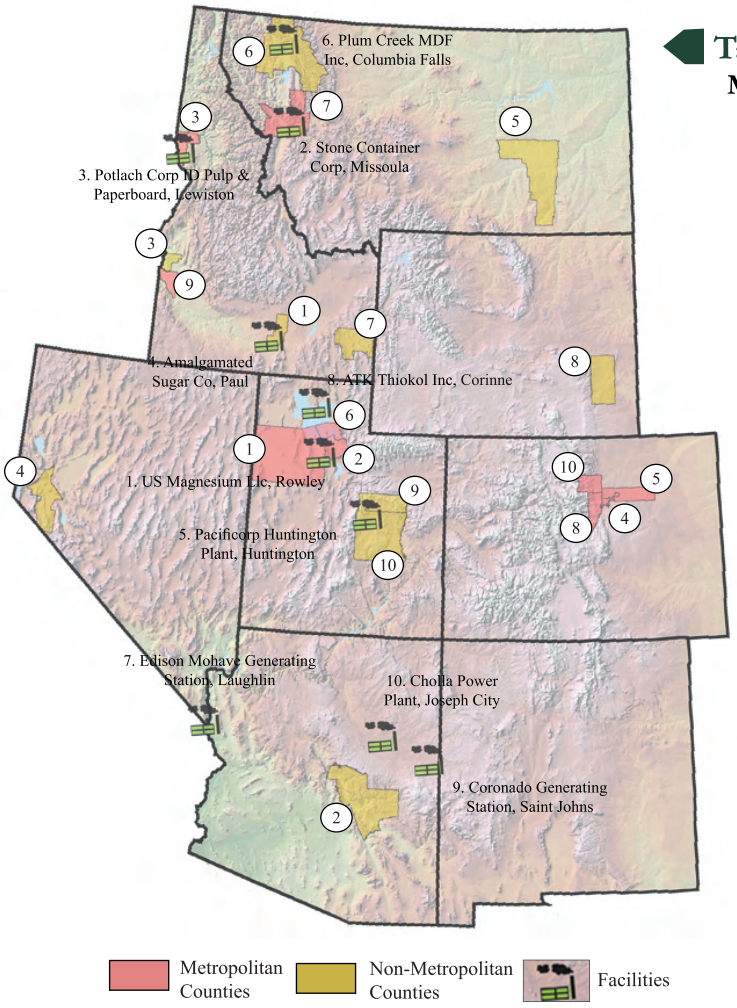
Toxic Air Emissions

Airborne toxic pollutants are easily transported throughout the environment and have been found to cause cancer, birth defects, and respiratory problems in humans. Additionally, toxic air pollutants cause acid deposition, smog, climate change, and the depletion of the ozone layer. Yet hazardous levels of toxic chemicals spew from the smoke stacks of industrial/federal facilities, from coal power plants to food processing plants to manufacturing facilities, every day across the United States. The Rockies, with relatively less manufacturing and lower power needs, fares relatively well compared to the rest of the U.S. with respect to pounds of toxic chemicals emitted to the air by industrial/federal facilities per square mile (*See* **Table 3**). Nevertheless, 38 of 280 counties in the Rockies failed to meet EPA standards for criteria pollutants in 2004 (*See* **Figure 1**).

About the Indicators

All data comes originally from the EPA's Toxics Release Inventory and has been normalized by the square miles covered by each geographic area. Using the statistical technique documented in *the Methods section*, counties were first scored independently for each criteria found in **Table 3**—the 2002 air emissions per square mile of All Toxics, HAPs, Metals, Carcinogens, PBTs, and Dioxin for all TRI-reporting industrial facilities—as well as the same values for the 1998-2001 average and the change in pounds and percent from then to 2002. Next, each county was assigned a final composite rank based on each of the individual scores and their corresponding weighting. These rankings are based only on the amount of various toxic chemicals emitted to the air per square mile, and do not necessarily indicate human and environmental threat nor reflect specific industrial/federal facility practices. The rankings are intended to locate the places with the highest concentration of toxic releases to the air and, therefore, the places with the most need to look into these other issues. The top ten facilities (table 3 map) were ranked on their 2002 air emissions of All Toxics.

Table 3. Map



	US	Rockies	AZ	CO	ID	MT	NV	NM	UT	WY
Electric Utilities	44%	18%	39%	37%	0%	16%	43%	40%	8%	36%
Chemicals	14%	4%	1%	6%	8%	2%	9%	1%	1%	27%
Paper	9%	4%	4%	0%	0%	30%	0%	0%	0%	0%
Plastics	4%	3%	13%	8%	1%	0%	5%	5%	1%	0%
Primary Metals	3%	39%	5%	3%	0%	4%	0%	1%	80%	0%
Food	3%	7%	1%	4%	43%	10%	0%	4%	0%	8%
Petroleum	3%	4%	0%	5%	0%	15%	0%	35%	2%	13%
Fabricated Metals	2%	3%	6%	21%	0%	0%	0%	3%	0%	9%
Lumber	2%	3%	2%	3%	0%	21%	0%	0%	0%	0%
Metal Mining	0%	3%	9%	0%	0%	2%	23%	1%	1%	0%

Table 3. Toxic Air Emissions: Regional, Top 10 Metro Counties, and Top 10 Non-metro Counties

2002 Toxic Air Emissions: Pounds Per Square Mile	All Toxics	HAPs	Metals	Carcinogens	PBTs	Dioxin*
United States	427	330	6	31	0.6	0.9
The Rocky Mountains	46	36	1	3	0.2	0.2
-Arizona	36	25	2	6	0.4	0.1
-Colorado	31	22	1	2	0.1	0.1
-Idaho	51	21	1	5	0.0	0.0
-Montana	30	24	1	4	0.1	0.1
-Nevada	20	10	2	2	0.6	0.1
-New Mexico	8	6	0	1	0.0	0.0
-Utah	220	206	2	3	0.2	0.9
-Wyoming	20	10	1	1	0.1	0.1
1. Tooele, Utah	2,032	2,032	0	2	0.7	8.8
2. Salt Lake, Utah	1,017	306	142	125	11.8	0.6
3. Nez Perce, Idaho	1,431	1,259	1	238	0.3	0.5
4. Denver, Colorado	967	494	11	15	1.4	0.8
5. Adams, Colorado	661	512	4	73	0.6	0.3
6. Davis, Utah	566	396	2	116	0.4	0.0
7. Missoula, Montana	598	560	0	82	0.1	0.3
8. Jefferson, Colorado	787	465	1	3	0.0	0.6
9. Canyon, Idaho	765	21	2	14	0.0	0.0
10. Boulder, Colorado	332	302	1	30	0.1	0.1
1. Minidoka, Idaho	1,248	0	0	0	0.1	0.0
2. Gila, Arizona	103	12	40	11	7.2	0.1
3. Payette, Idaho	373	373	0	0	0.0	0.0
4. Lyon, Nevada	286	0	0	236	0.0	0.0
5. Rosebud, Montana	119	85	22	1	0.5	2.7
6. Flathead, Montana	170	152	0	64	2.0	0.0
7. Caribou, Idaho	168	0	39	9	0.5	0.0
8. Platte, Wyoming	43	30	19	6	1.8	1.7
9. Carbon, Utah	245	225	1	0	0.1	0.5
10. Emery, Utah	214	193	3	1	0.2	0.2

*Dioxin values are in milligrams per square mile

About the Indicators

All data comes originally from the EPA's Toxics Release Inventory and has been normalized by the square miles of surface water in each geographic area. Using the statistical technique documented in *the Methods section*, counties were first scored independently for each criteria found in **Table 5**—the 2002 surface water discharges per square mile of surface water of All Toxics, HAPs, Metals, Carcinogens, PBTs, and Dioxin for all TRI-reporting industrial facilities—as well as the same quantities on average from 1998-2001 and the change in pounds and percent from then to 2002. Next, each county was assigned a final composite rank based on each of the individual scores and their corresponding weighting. These rankings are based only on the amount of various toxic chemicals discharged to surface water per square mile, and do not necessarily indicate human and environmental threat nor reflect specific industrial/federal facility practices. The rankings are intended to locate the places with the highest concentration of toxic releases to surface water and, therefore, the places with the most need to look into these other issues. The top ten facilities (table 5 map) are ranked on their 2002 water discharges of All Toxics.

Toxic Water Discharges

Water covers most of the Earth's surface and is essential for life. Our bodies are composed mostly of this precious resource that we must consume daily. Yet, some industrial/federal facilities discharge dangerous levels of toxic chemicals into our nation's water bodies. Toxic pollution in drinking, bathing, fishing, and swimming water directly exposes humans to hazardous substances, and polluted waters are less able to maintain functioning aquatic communities, further threatening human health. Per capita and per square mile of land, less toxic chemicals are discharged to the Rockies' surface water than in the whole U.S. However, water is sparse in the Rockies, so per square mile of surface water more pounds of toxic chemicals are discharged to water in the Rockies (*See* **Table 5**). In each Rockies state somewhere between 1 to 11 percent of all assessed water bodies are categorized as threatened or impaired for failing to meet EPA quality standards for their designated use in the combined 1998 and 2002 testing period (*See* **Figure 2**).

Table 5. Toxic Water Discharges: Regional, Top 10 Metro Counties, and Top 10 Non-metro Counties

2002 Toxic Surface Water Discharges: Pounds Per Square Mile of Surface Water	All Toxics	HAPs	Metals	Carcinogens	PBTs	Dioxin*
United States	895	60	43	6	0.6	4.3
The Rocky Mountains	1,438	92	66	8	0.3	0.6
-Arizona	19	15	4	0	0.0	0.0
-Colorado	13,464	89	84	1	0.7	0.3
-Idaho	6,503	694	468	56	1.1	5.2
-Montana	69	21	18	1	0.3	0.0
-Nevada	126	38	16	5	0.1	0.0
-New Mexico	295	1	13	1	0.5	0.0
-Utah	23	5	6	3	0.1	0.0
-Wyoming	29	7	22	0	0.0	0.0
1. Nez Perce, Idaho	38,710	35,034	12,559	6,207	25.7	586.2
2. Canyon, Idaho	21,705	1,529	0	0	0.0	0.0
3. Clear Creek, Colorado	17,035	1,188	1,188	0	0.0	0.0
4. Adams, Colorado	7,438	61	253	18	18.0	16.4
5. Jefferson, Colorado	15,712	0	0	0	0.0	0.0
6. El Paso, Colorado	9,709	0	6	0	0.0	0.0
7. Weld, Colorado	11,954	374	1	0	0.0	0.0
8. Pueblo, Colorado	1,171	1,004	1,171	18	17.9	0.0
9. Yellowstone, Montana	5,375	293	9	8	7.3	0.0
10. Missoula, Montana	1,381	1,352	1,294	62	18.0	0.0
1. Shoshone, Idaho	184,698	183,448	184,698	434	432.7	0.0
2. Minidoka, Idaho	695,646	0	0	0	0.0	0.0
3. Morgan, Colorado	529,014	0	0	0	0.0	0.0
4. Cheyenne, Colorado**	0	0	0	0	0.0	0.0
5. Rio Grande, Colorado	31,802	22,181	31,802	0	0.0	0.0
6. Cassia, Idaho	154,275	240	0	0	0.0	0.0
7. Humboldt, Nevada	7,677	1,141	1,194	335	7.0	0.0
8. Otero, New Mexico	70,942	0	0	0	0.0	0.0
9. Montrose, Colorado**	1	1	1	1	1.0	0.0
10. Box Elder, Utah**	0	0	0	0	0.0	0.0

*Dioxin values are in milligrams per square mile

**It is unclear from this table why these three counties made the top ten. Cheyenne, CO has by far the highest non-metro discharges of dioxin to surface water per square mile of surface water, even though the number does not show up here. Although Montrose, CO and Box Elder, UT have low discharges, they both had huge percent increases in those releases from the 1998-2001 average to 2002.

Table 5. Map

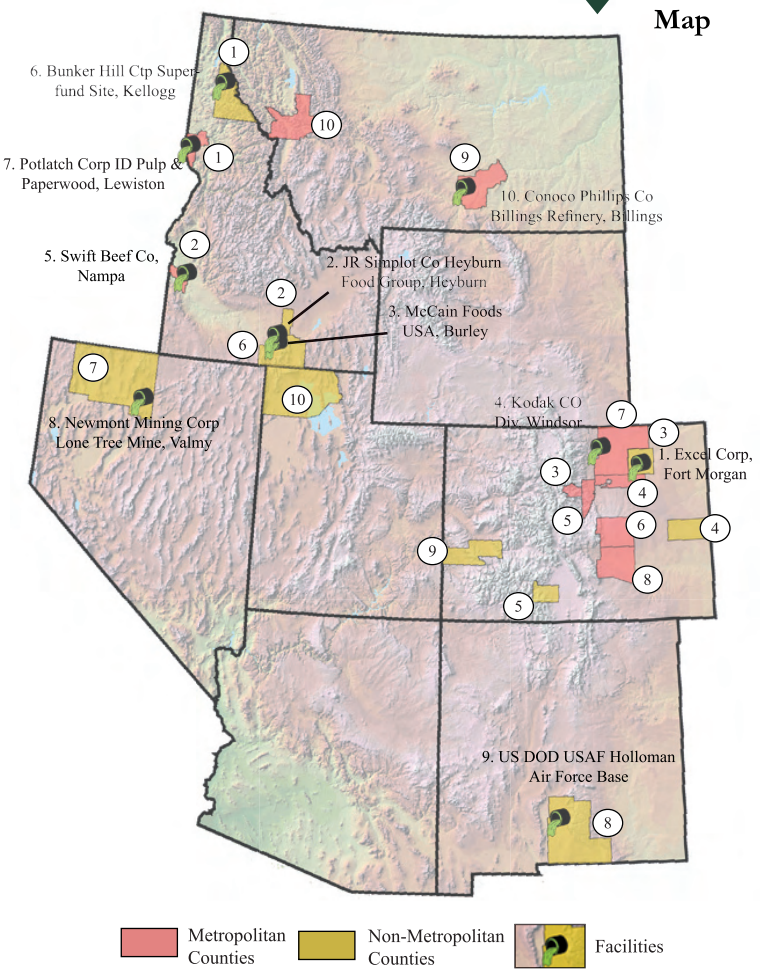


Table 6. Industry Share: 2002 All Toxic Water Discharges

	US	Rockies	AZ	CO	ID	MT	NV	NM	UT	WY
Food	30%	64%	0%	89%	46%	1%	0%	0%	0%	15%
Chemicals	25%	0%	0%	0%	0%	0%	0%	0%	0%	10%
Primary Metals	18%	0%	15%	0%	0%	0%	0%	0%	12%	0%
Petroleum	7%	1%	0%	1%	0%	71%	0%	0%	59%	0%
Paper	7%	0%	0%	0%	0%	27%	0%	0%	0%	0%
Electric Utilities	1%	0%	4%	0%	0%	0%	18%	4%	0%	75%
Metal Mining	0%	1%	4%	0%	0%	0%	82%	0%	29%	0%

Toxic Land Releases

The bulk of toxic chemicals released in the Rockies are deposited to the land under a wide range of circumstances from tightly contained landfills to lightly monitored, highly exposed waste heaps. In 2002, over 2 times as many pounds of toxic chemicals were released to each square mile of land in the Rockies than in the US as a whole and from 1998-2001 it was 3 times as much (*See* **Table 7**). Land pollution may not seem very threatening, but natural processes, like wind and rain, readily transport land pollution to the air and water. Although the EPA's Superfund program helps remediate contaminated lands deemed most hazardous, there are no nation-wide standards for comprehensively measuring and maintaining land pollution levels. In the Rockies, there are currently 86 Superfund sites (*See* **Figure 3**), but countless other toxically potent lands in need of clean-up exist. Such high levels of toxic land pollution will only create more.

About the Indicators

All data comes originally from the EPA's Toxics Release Inventory and has been normalized by the square miles of land in each geographic area. Using the statistical technique documented in *the Methods section* counties were first scored independently for each criteria found in **Table 7**—the 2002 land releases per square mile by TRI-reporting industrial facilities of All Toxics (mining industry only), All Toxics (non-mining industry), All Toxics (released to RCRA landfills only), HAPs, Metals, Carcinogens, PBTs, and Dioxin—as well as the same values for the average from 1998-2001 and the change in percent and pounds from then to 2002. Next, each county was assigned a composite rank presented in the county tables based on each of the independent scores and their corresponding weighting. These rankings are based only on the amount of various toxic chemicals released to land per square mile, and do not necessarily indicate human and environmental threat nor reflect specific industrial/federal facility practices. The rankings are intended to locate the places with the highest concentration of toxic releases to land and, therefore, the places with the most need to look into these other issues. The top ten facilities (table 7 map) are ranked on their 2002 land releases of All Toxics.

Table 7. Map

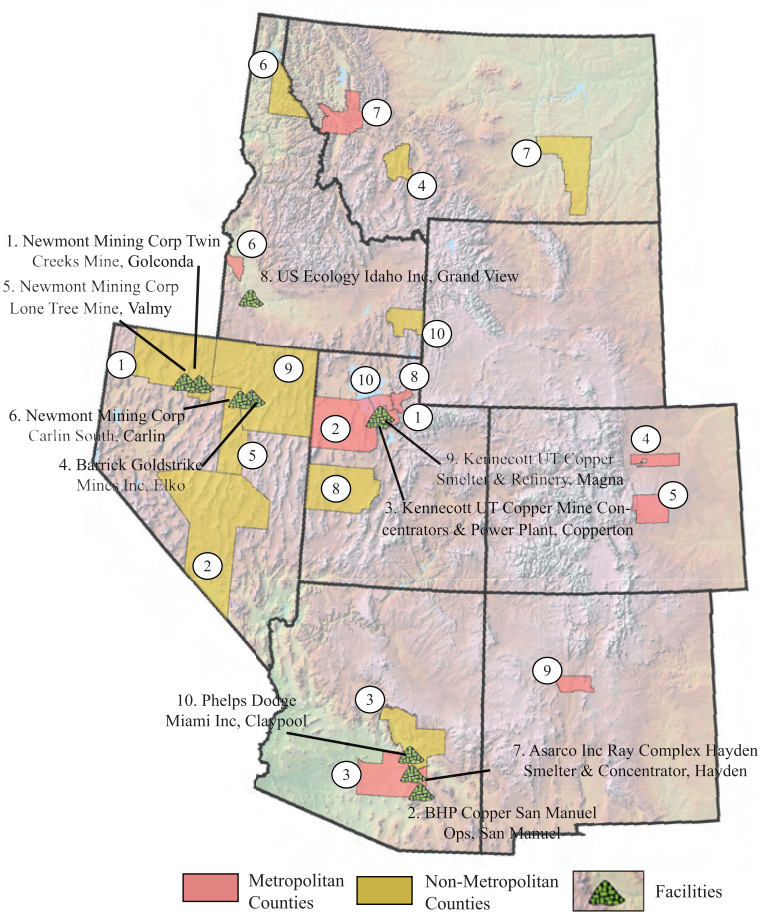


Table 8. Industry Share: 2002 All Toxic Land Releases

	US	Rockies	AZ	CO	ID	MT	NV	NM	UT	WY
Metal Mining	59%	63%	11%	46%	35%	64%	98%	36%	74%	0%
Primary Metals	18%	29%	87%	0%	0%	0%	0%	0%	18%	0%
Electric Utilities	13%	3%	2%	32%	0%	36%	0%	17%	3%	99%
RCRA/Solvent Recovery	6%	4%	0%	1%	54%	0%	1%	0%	4%	0%
Coal Mining	1%	1%	0%	19%	0%	0%	0%	42%	0%	0%

Table 7. Toxic Land Releases: Regional, Top 10 Metro Counties, and Top 10 Non-metro Counties

2002 Toxic Land Releases: Pounds Per Square Mile of Land	All Toxics (Mining)	All Toxics (Non-mining)	All Toxics (RCRA Landfills)	HAPs	Metals	Carcinogens	PBTs	Dioxin*
United States	341	214	32	281	561	229	106	12.6
The Rocky Mountains	795	409	46	749	1,238	631	164	3.0
-Arizona	301	2,483	0	753	2,824	209	101	0.0
-Colorado	80	-16	1	64	123	55	53	0.0
-Idaho	223	410	346	224	616	89	54	0.1
-Montana	119	-54	0	55	184	43	38	0.0
-Nevada	4,398	52	44	4,217	4,407	4,007	565	0.0
-New Mexico	62	-17	0	14	78	9	6	0.0
-Utah	1,345	395	74	691	1,776	674	605	30.3
-Wyoming	0	87	0	11	83	5	1	0.0
1. Salt Lake, Utah	154,063	34,204	102	73,601	187,071	72,990	67,678	0.0
2. Tooele, Utah	0	925	896	416	879	342	151	352.5
3. Pinal, Arizona	427	45,906	0	13,298	46,334	2,305	626	0.0
4. Adams, Colorado	0	69	68	61	68	46	12	0.0
5. El Paso, Colorado	0	614	0	48	614	45	32	0.0
6. Canyon, Idaho	0	808	0	1	40	1	1	0.0
7. Missoula, Montana	0	13	0	13	13	0	0	0.0
8. Morgan, Utah	0	32	0	18	32	18	17	0.0
9. Bernalillo, New Mexico	0	25	0	22	25	23	23	0.0
10. Davis, Utah	0	8	0	0	4	5	4	0.0
1. Humboldt, Nevada	36,321	18	0	35,814	36,046	34,576	4,126	0.0
2. Nye, Nevada	63	269	269	237	312	237	186	0.0
3. Gila, Arizona	4,709	7,292	0	1,968	12,002	1,512	1,008	0.0
4. Jefferson, Montana	10,242	0	0	3,452	10,049	3,339	3,321	0.0
5. Eureka, Nevada	10,435	0	0	9,068	10,278	8,375	690	0.0
6. Shoshone, Idaho	6,927	524	0	6,433	7,451	1,016	767	0.0
7. Rosebud, Montana	0	1,952	0	376	1,950	52	11	0.0
8. Millard, Utah	83	169	0	70	187	47	6	1.0
9. Elko, Nevada	4,860	0	0	4,127	4,719	3,662	526	0.0
10. Caribou, Idaho	0	1,546	0	0	1,545	378	27	0.0

*Dioxin values are in milligrams per square mile

About the Indicators

Using the statistical technique documented in *the Methods section* counties were given an overall ranking based on each of their rankings for the air, water, and land sections. Each ranking was converted to an index value as seen in the tables below. The mean index value is zero for each index, so positive index values are above average pollution levels and negative index values are below average pollution levels. Metro and non-metro county index values should not be compared. These rankings are based only on the amount of various toxic chemicals released to air, water, and land per square mile, and do not necessarily indicate human and environmental threat nor reflect specific industrial/federal facility practices. The rankings are intended to locate the places with the highest concentration of toxic releases to the environment and, therefore, the places with the most need to look into these other issues.

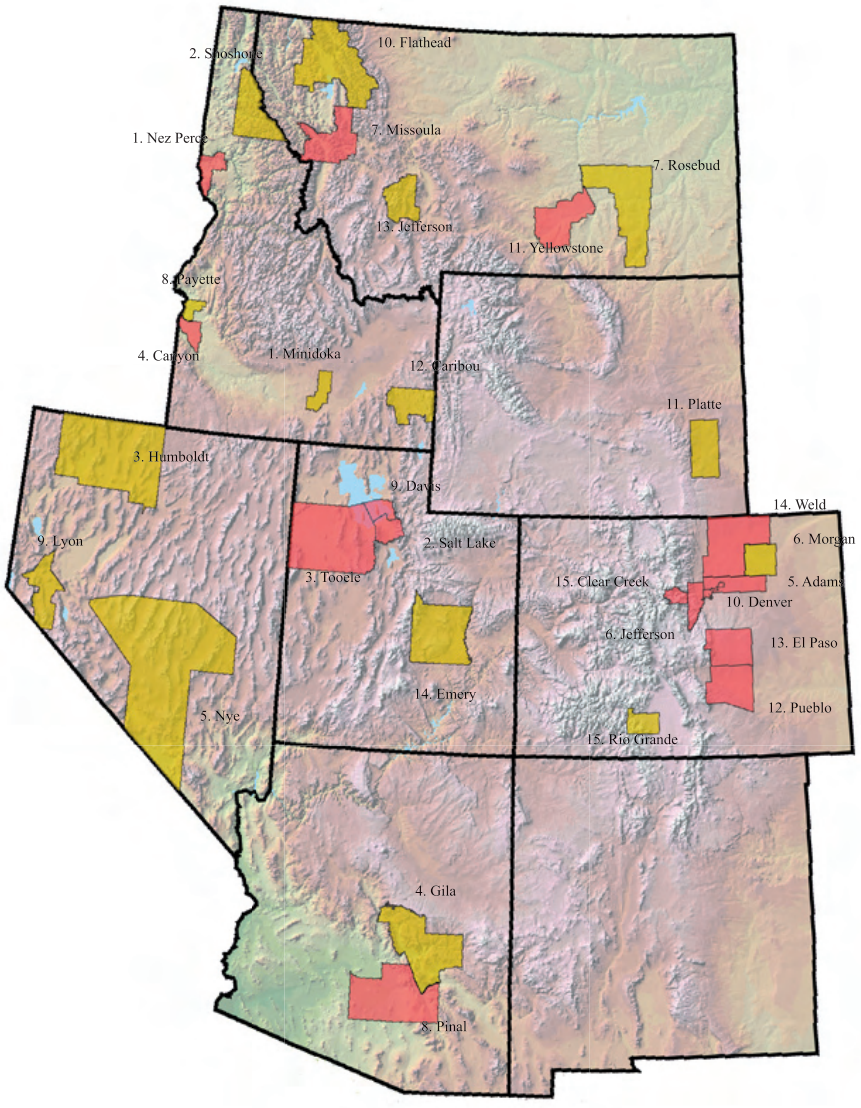
The Toxic Rockies: Final Rankings

Industrial and federal facility pollution is widespread in the Rockies and contributes to the degradation of this unique, beautiful, and fragile part of the country and threatens its inhabitants. Although industry is and should be a major contributor to the Rockies economy, we need to make sure we are not risking too much. Government law and enforcement need to be strict enough to ensure that industrial/federal facilities abide by appropriate business practices. Facilities need to be using the best available/practical technology to control pollution. Rockies citizens need to work together to ensure that the government and facilities live up to these standards. Industrial/federal facility toxic releases to air, water, and land each pose serious, though sometimes different, threats to human and environmental health. Combining these three types of pollution to take a look at overall toxic pollution highlights those places in serious need of further inquiry.

Figure 6. Table

Top 15 Metro Counties	Air Index	Water Index	Land Index	Composite Index
1. Nez Perce, Idaho	209	683	-6	295
2. Salt Lake, Utah	253	-1	325	193
3. Tooele, Utah	292	-41	123	125
4. Canyon, Idaho	55	140	-0	65
5. Adams, Colorado	87	95	6	63
6. Jefferson, Colorado	70	82	-16	45
7. Missoula, Montana	74	48	-1	40
8. Pinal, Arizona	-31	27	104	33
9. Davis, Utah	79	16	-1	31
10. Denver, Colorado	103	-4	-8	30
11. Yellowstone, Montana	32	49	-4	26
12. Pueblo, Colorado	27	53	-14	22
13. El Paso, Colorado	2	59	0	20
14. Weld, Colorado	11	58	-11	19
15. Clear Creek, Colorado	-48	109	-4	19
Mean Index Value	0	0	0	0

Top 15 Non-metro Counties	Air Index	Water Index	Land Index	Composite Index
1. Minidoka, Idaho	430	368	-11	262
2. Shoshone, Idaho	-15	535	77	199
3. Humboldt, Nevada	23	60	374	153
4. Gila, Arizona	199	-7	264	152
5. Nye, Nevada	10	-7	358	121
6. Morgan, Colorado	20	298	22	113
7. Rosebud, Montana	160	-35	54	60
8. Payette, Idaho	185	-6	0	60
9. Lyon, Nevada	180	8	-29	53
10. Flathead, Montana	153	-7	3	50
11. Platte, Wyoming	115	-7	36	48
12. Caribou, Idaho	121	-35	39	42
13. Jefferson, Montana	19	-6	106	40
14. Emery, Utah	90	-7	6	30
15. Rio Grande, Colorado	-12	97	-1	28
Mean Index Value	0	0	0	0



"Utahns beat back radioactive waste"
High Country News 12/8/2003

"Tests find water from Wyoming coal site toxic"
Casper Star Tribune 3/7/2004

"Toxic gases blamed for Yellowstone bison deaths"
Billings Gazette 3/24/2004

"DOE will commence nuclear waste shipments to Nevada"
Reno Gazette 4/16/2004

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"Utah would get pollution from Nevada power plants"
Salt Lake Tribune 3/4/2004

"Broken barrel found in Idaho lab's n-waste pit"
Twin Falls Tribune 3/31/2004

"Utah chemical-weapons incinerator let safety slip, Army memo says"
Salt Lake Tribune 4/7/2004

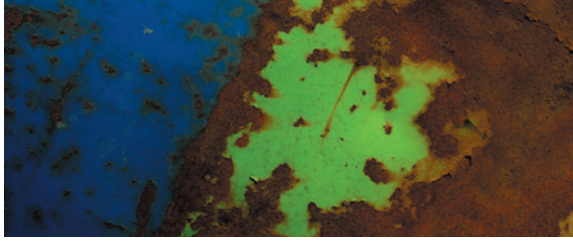


Figure 7. A Closer Look at Some of the Most Toxic Counties

Go to www.epa.gov/triexplorer to identify the facilities that are polluting in your home county.

1. Nez Perce, ID (Metro)	2002 Air Emissions		2002 Surface Water Discharges		2002 Land Releases	
Top Facility of Nez Perce's 7 TRI-Reporting Facilities	Pounds	%	Pounds	%	Pounds	%
POTLATCH CORP. IDAHO PULP & PAPERBOARD, LEWISTON	1,184,030	97%	281,287	99.8%	282,667	100%
-Lumber and Wood Products (Sawmills)						
-Paper Products (Pulp, Paper, and Paperboard Mills)						
County Total	1,225,624	100%	281,812	100%	282,667	100%

1. Minidoka, Idaho (Non-metro)	2002 Air Emissions		2002 Surface Water Discharges		2002 Land Releases	
Top Facilities of Minidoka's 3 TRI-Reporting Facilities	Pounds	%	Pounds	%	Pounds	%
AMALGAMATED SUGAR CO, PAUL	949,919	99.8%	0	0%	2,848	100%
-Food (Beet Sugar)						
J. R. SIMPLOT CO. HEYBURN FOOD GROUP, HEYBURN	2,000	0%	2,337,369	100%	0	0%
-Food (Vegetables/Industrial Organic Chemicals)						
County Total	951,919	100%	2,337,369	100%	2,848	100%

Figure 6. The Rockies Top 15 Toxic Metro Counties and Non-metro Counties

2. Salt Lake, UT (Metro)	2002 Air Emissions		2002 Surface Water Discharges		2002 Land Releases	
Top Facilities of Salt Lake's 63 TRI-Reporting Facilities	Pounds	%	Pounds	%	Pounds	%
KENNECOTT UTAH COPPER MINE CONCENTRATORS & POWER PLANT, COPPERTON	19,421	2%	18,178	29%	113,603,195	82%
-Metal Mining (Copper Ores)						
CHEVRON PRODUCTS CO SALT LAKE REFINERY, SALT LAKE CITY	42,103	5%	37,092	59%	0	0%
-Petroleum Refining						
-Wholesale Trade (Petroleum Stations and Terminals)						
BD MEDICAL SYS., SANDY	166,204	20%	0	0%	0	0%
-Medical Goods (Surgical and Medical Instruments)						
TESORO REFINING & MARKETING CO, SALT LAKE CITY	154,362	19%	0	0%	2,860	0%
-Petroleum Refining						
KENNECOTT UTAH COPPER SMELTER & REFINERY, MAGNA	102,640	12%	7,334	12%	25,110,922	18%
-Primary Metals (Primary Copper)						
County Total	821,509	100%	62,640	100%	138,824,328	100%

4. Gila, AZ (Non-metro)	2002 Air Emissions		2002 Surface Water Discharges		2002 Land Releases	
Top Facilities of Gila's 5 TRI-Reporting Facilities	Pounds	%	Pounds	%	Pounds	%
ASARCO INC. RAY COMPLEX HAYDEN SMELTER & CONCENTRATOR, HAYDEN	173,197	35%	0	-	34,767,994	61%
-Metal Mining (Copper Ores)						
-Primary Metals (Primary Copper)						
PHELPS DODGE MIAMI INC., CLAYPOOL	311,488	63%	0	-	22,452,944	39%
-Metal Mining (Copper Ores)						
-Primary Metals (Primary Copper/Copper Rolling and Drawing)						
County Total	492,180	100%	0	-	57,220,938	100%

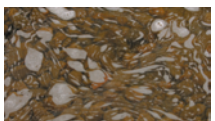
"Toxic chemicals creeping toward Colorado River"
High Country News 5/24/2004

"Feds investigate shipping errors from Idaho lab to N.M. waste site"
Idaho Falls Register 7/19/2004

"Students count up toxic trainloads passing through Salt Lake City"
Salt Lake Tribune 10/1/2004

"Ranchers fear waste fallout"
Denver Post 2/13/2005

"Feds break promises with elimination of monitoring at N.M. n-waste site"
Santa Fe New Mexican 5/4/2004



"Administration's Failure to Support 'Polluter Pays' Principle Endangers Americans"
US Newsweek 7/27/2004

"Gas fields cloud up Wyoming skies"
Casper Star Tribune 11/7/2004

2005

Note: many headlines come from the on-line new service *Headwaters News*, available at www.headwatersnews.org

About the Indicators

All data in **Table 9** comes originally from the 2002 USDA-NASS Census of Agriculture and has been normalized by the square miles covered by each geographic region. Using the statistical technique documented in *the Methods section* counties were first scored independently for each criteria found in **Table 9**—the 2002 acres per square mile application of commercial fertilizer, lime, and soil conditioners; manure; chemicals used to control weeds, grass, or brush; chemicals used to control nematodes; chemicals used to control diseases in crops and orchards; and chemicals used to control growth, thin fruit, or defoliate. Next, each county was assigned a final composite rank based on each of the individual scores. These rankings are based only on the amount of various fertilizers and pesticides applied to land and do not necessarily indicate human and environmental threat or reflect specific farm's practices. The rankings are intended to locate the places with the highest concentration of fertilizer and pesticide use and, therefore, the places with the most need to look into these other issues. The animal waste data in **Table 10** is an estimate from www.scorecard.org based on the numbers of different types of livestock in the county.

Toxic Supplement: Agriculture

One notable source of toxic pollution not covered in the TRI is agriculture. To aid agriculture in 2002, 20 acres of farmland and pastureland per square mile of all land in the Rockies were treated with commercial fertilizer, lime, or soil conditioners. Many fertilizers contain metals and other dangerous chemicals, which can wash away and contaminate surface and groundwater. One acre per square mile of the Rockies was treated with manure, which can cause respiratory irritation, chest tightness, headaches, sore throat, and diarrhea. Four Rockies acres per square mile were treated with chemicals to combat insects, and 15 acres per square mile were treated with chemicals to combat weeds, grass, and brush. Pesticides are designed to harm or kill living things and in humans, can damage the nervous system, cause cancer, and impair the hormone and endocrine systems.

Table 9. Agricultural Toxics: Regional, Top 10 Metro Counties, and Top 10 Non-metro Counties

2002 Acres Treated Per Square Mile with…	Commercial fertilizer, lime, and soil conditioners	Manure	Chemicals used to control insects	Chemicals used to control weeds, grass, or brush	Chemicals used to control nematodes	Chemicals used to control diseases in crops and orchards	Chemicals used to control growth, thin fruit, or defoliate
United States	65	6	17	51	2	3	3
The Rocky Mountains	20	1	4	15	0	1	1
-Arizona	7	1	5	5	0	1	1
-Colorado	34	2	8	26	0	1	1
-Idaho	42	3	12	30	3	5	2
-Montana	45	2	3	39	0	2	0
-Nevada	3	0	1	2	0	0	0
-New Mexico	6	1	2	3	0	0	0
-Utah	7	1	3	4	0	0	0
-Wyoming	9	1	1	5	0	0	0
1. Canyon, Idaho	218	22	117	175	19	36	15
2. Jefferson, Idaho	142	9	39	68	11	18	15
3. Bonneville, Idaho	98	4	34	63	6	25	6
4. Power, Idaho	108	2	30	70	10	15	5
5. Nez Perce, Idaho	153	3	27	135	0	8	0
6. Adams, Colorado	167	3	21	157	0	0	0
7. Weld, Colorado	77	12	32	57	2	4	0
8. Franklin, Idaho	63	21	12	60	0	0	0
9. Pinal, Arizona	35	4	24	19	1	2	12
10. Bannock, Idaho	60	6	10	64	4	0	2
1. Madison, Idaho	258	6	102	198	45	53	59
2. Minidoka, Idaho	249	13	115	193	22	27	15
3. Jerome, Idaho	199	38	49	145	13	18	20
4. Bingham, Idaho	122	7	48	86	25	31	9
5. Phillips, Colorado	317	5	85	302	3	7	1
6. Gooding, Idaho	129	46	26	80	4	5	1
7. Alamosa, Colorado	74	4	33	50	12	25	21
8. Teton, Idaho	133	8	52	99	0	8	12
9. Cassia, Idaho	105	8	34	77	11	11	7
10. Lewis, Idaho	268	1	41	253	0	0	0

Figure 8. A Look at the Top 10s from Table 9

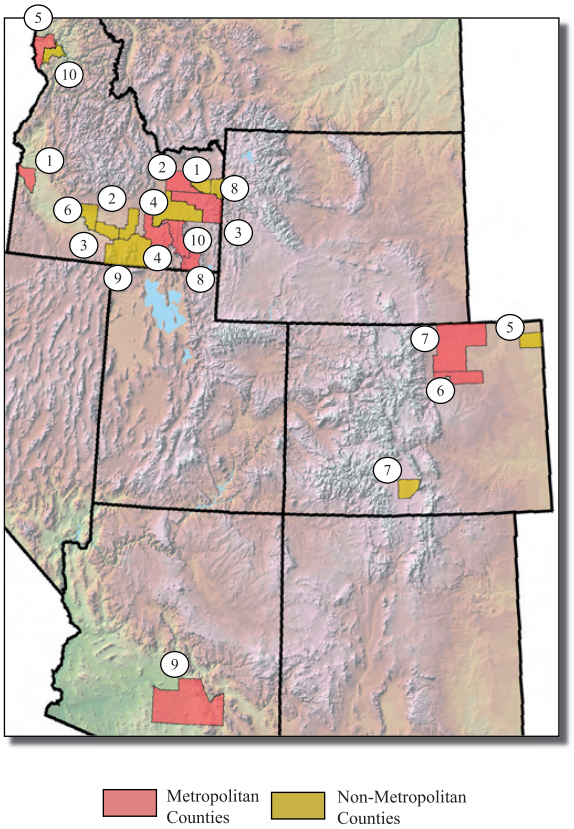


Table 10. Estimated Animal Waste: Regional, Top 10 Metro Counties, and Top 10 Non-metro Counties

1997 Estimated Pounds of Animal Waste per Square Mile	
United States	239
The Rocky Mountains	113
-Arizona	61
-Colorado	192
-Idaho	179
-Montana	129
-Nevada	37
-New Mexico	107
-Utah	92
-Wyoming	123
1. Canyon, Idaho	1,591
2. Weld, Colorado	945
3. Cache, Utah	682
4. Franklin, Idaho	673
5. Ada, Idaho	509
6. Gem, Idaho	407
7. Jefferson, Idaho	380
8. Weber, Utah	379
9. Laramie, Wyoming	372
10. Maricopa, Arizona	282
1. Jerome, Idaho	2,658
2. Gooding, Idaho	2,317
3. Morgan, Colorado	927
4. Curry, New Mexico	781
5. Yuma, Colorado	718
6. Payette, Idaho	707
7. Custer, Colorado	635
8. Twin Falls, Idaho	622
9. Logan, Colorado	531
10. Sedgwick, Colorado	455

Toxic Supplement: Toxic Threat

Different toxic chemicals pose different types and levels of threat to humans and the environment. The Environmental Defense Fund's Scorecard uses TRI data along with chemical properties, toxicity, and exposure potential to come up with rankings for various environmental and human-health problems. To supplement our analysis, this section uses Scorecard rankings to obtain an estimate of a few specific toxic threats in the Rockies. Ozone depleting potential, which is of global environmental concern due to its believed links to global warming, is 10 times greater per square mile in the US than in the Rockies (*See* **Table 12**). Cancer Health Risk, however, is 1.5 times greater in the Rockies (*See* **Table 11**). Non-cancer Health Risk in the Rockies is approximately 3/4 of what it is in the US (*See* **Table 10**).

About the Indicators

All county data comes originally from Environmental Defense Fund's Scorecard (www.scorecard.org), and has been normalized by the square miles covered by each geographic region. For Ozone Depleting Potential, counties are ranked on Scorecard's estimated pounds of CFC 11-equivalents released in the county to air and water in 2002 per square mile. For Cancer Health Risk, counties are ranked on Scorecard's estimated pounds of Benzene-equivalents released in the county to air and water in 2002 per square mile. For Non-cancer Health Risk, counties are ranked on Scorecard's estimated pounds of Toluene-equivalents released in the county to air and water in 2002 per square mile.

Table 12. Ozone Depletion in the Rockies

2002 Ozone Depleting Potential (Pounds of CFC 11-equivalents per Square Mile)	
United States	1.25
The Rocky Mountains	0.11
-Arizona	0.16
-Colorado	0.09
-Idaho	0.00
-Montana	0.00
-Nevada	0.05
-New Mexico	0.01
-Utah	0.33
-Wyoming	0.00

Figure 9. Non Cancer Risk Top 10s: Metro Counties and Non-metro Counties

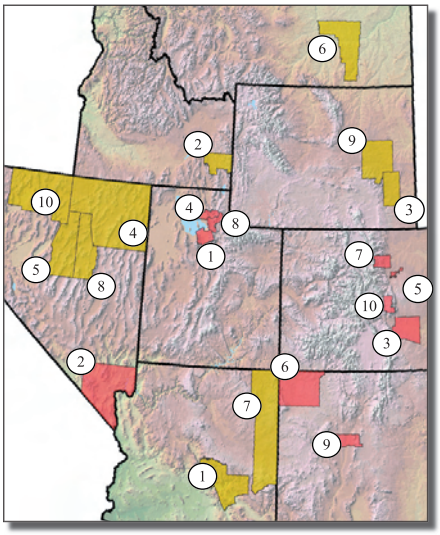
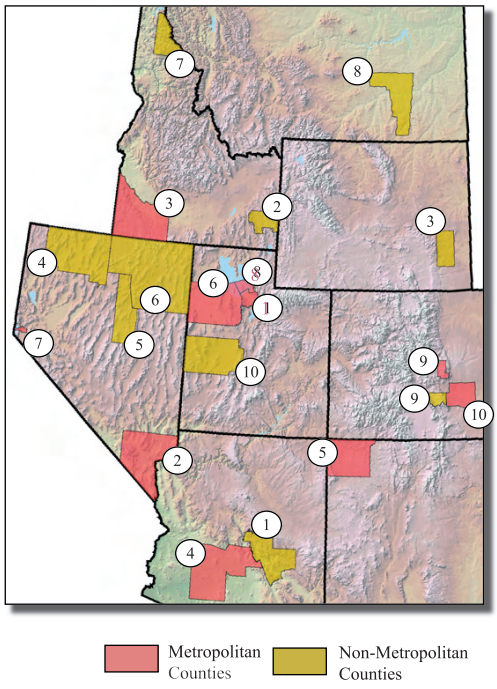


Figure 10. Cancer Risk Top 10s: Metro Counties and Non-metro Counties



Tables 10 & 11. Health Risks: Regional and Top 10 Metro and Non-metro Counties

2002 Non-Cancer Health Risk (Pounds of Toluene-equivalents Per Square Mile)	
United States	489,481
The Rocky Mountains	365,593
-Arizona	394,743
-Colorado	124,888
-Idaho	102,908
-Montana	50,326
-Nevada	777,853
-New Mexico	61,683
-Utah	176,681
-Wyoming	143,129
1. Salt Lake, Utah	9,284,706
2. Clark, Nevada	4,573,174
3. Pueblo, Colorado	3,169,665
4. Weber, Utah	2,274,588
5. Denver, Colorado	1,161,740
6. San Juan, New Mexico	1,119,465
7. Boulder, Colorado	1,051,413
8. Morgan, Utah	704,006
9. Bernalillo, New Mexico	667,437
10. Teller, Colorado	518,821
1. Gila, Arizona	5,421,478
2. Caribou, Idaho	4,058,667
3. Platte, Wyoming	2,037,046
4. Elko, Nevada	1,802,018
5. Lander, Nevada	1,358,826
6. Rosebud, Montana	974,748
7. Apache, Arizona	855,735
8. Eureka, Nevada	765,558
9. Converse, Wyoming	656,491
10. Humboldt, Nevada	538,421

2002 Cancer Health Risk (Pounds of Benzene-equivalents Per Square Mile)	
United States	1,081
The Rocky Mountains	1,452
-Arizona	2,368
-Colorado	4
-Idaho	838
-Montana	42
-Nevada	2,894
-New Mexico	25
-Utah	695
-Wyoming	532
1. Salt Lake, Utah	63,136
2. Clark, Nevada	5,562
3. Owyhee, Idaho	1,247
4. Maricopa, Arizona	726
5. San Juan, New Mexico	506
6. Tooele, Utah	453
7. Carson City, Nevada	430
8. Davis, Utah	82
9. Teller, Colorado	68
10. Pueblo, Colorado	67
1. Gila, Arizona	56,300
2. Caribou, Idaho	31,135
3. Platte, Wyoming	24,634
4. Humboldt, Nevada	19,673
5. Eureka, Nevada	8,613
6. Elko, Nevada	2,558
7. Shoshone, Idaho	1,518
8. Rosebud, Montana	1,154
9. Custer, Colorado	676
10. Millard, Utah	615

Rockies Sprawl

By F. Patrick Holmes

Index

Merriam-Webster's Collegiate Dictionary defines "sprawl" as a verb, transitive, "to cause to spread out carelessly or awkwardly." For some, sprawl is a term used to express aesthetic distaste over excessive growth around population centers. For others, the term refers to everything from density, to land-use, to pedestrian orientation. Sprawl conjures up images of low-density residential housing, car dependent cultures, freeway off-ramp office parks, and big-box stores eroding our farms, forests, and open spaces. Academics have coined catchphrases for the multi-dimensions of sprawl, the slurbs and zoomburbs, exopolises, and edge cities. They have discovered megacounties and freeway districts, and countless acronyms like LULU – locally unwanted land use, BANANA – build absolutely nothing anywhere near, NOPE – not on planet earth, and the ever-prevalent NIMBY – not in my backyard.[1] Even regions take on whole new names like "Ft. Greeland" here in Colorado, referring to the Ft. Collins, Loveland and Greeley urban/suburban agglomeration. Those of us who study sprawl find ourselves so entrenched with our subject matter that we are increasingly becoming like the subject itself: our expansive new vocabulary verges on becoming awkward and our ongoing attempts to orient ourselves in the rapidly transforming landscape have become rather disoriented.

Here in the Rocky Mountains, where population growth has exploded at three times the national average, many citizens are losing grasp of their civic destinies in their immediate backyard as a result of sprawl. "Twice I have bought a house on the edge of town, hoping to enjoy the desert for a long time," history professor at the University of Nevada Las Vegas Hal Rothman said. "Each time I found myself downtown." [2]

Aridity, topography, land ownership and stewardship, all contribute to a unique growth dynamic in the Rockies. All around the country, researchers conduct statistical analyses of the spatial characteristics of growth, planners and landscape architects use visual tools to qualitatively measure citizens' preferences for various growth outcomes, and aerial photography is used to show our human footprint from above. The Rockies Project's approach to understanding the growth dynamics in the Rocky Mountains will rely on each of these approaches. How successful we "citizens of the Rockies" are in reacting to the pressures of growth in the coming decades will depend largely upon our ability to collectively respond to one salient question: What is the proper relationship between the natural and built environment here in the Rockies?

What Causes Sprawl?

The highly charged political debate over growth management policy has divided the public understanding of the causes and consequences of sprawl.

Anti-sprawl activists maintain that sprawl emerges from a prevalent dichotomy between private benefits and public costs. Sprawl, they insist, is born of a disproportionate political alliance; one in which bankers and real-estate interests, developers and contractors, utility managers, and public officials all stand to benefit from increased development. The emerging political economy of growth has allegiances with supermarket and fast-food chains, local retailers, the automobile industry, and federal housing and transportation subsidies. Citizen voices and perspectives are increasingly diminished in this setting and only recently have concerns about open space, scenic vistas, wildlife habitat, and recreational opportunities been considered as important contributors to the quality of our lives. [3]

Others view sprawl as the expression of our free-market demand for low-density neighborhood lifestyles. They insist that the "enthusiastic suburbanization" of the landscape is in fact the result of demand for the suburban product.[4] Moreover this faction believes that growth management activists misdiagnose our transportation problems and unwisely push to limit housing choices, thereby increasing housing costs. A low-density neighborhood is where, according to the *Colorado Springs Gazette*, "hard-working people don't have to be wealthy to claim a piece of the American Dream." [5]

Through these lenses one perspective sees sprawl as affliction, harmful to the environment and community; while the other sees dispersed development as advantageous, with homeownership providing the vehicle for financial security and thus local economic prosperity.

Equally contested and debated between the disparate perspectives are the consequences of low-density development. Traffic congestion, diminishing air and water quality, racial and economic segregation, loss of prime agricultural lands and natural habitats, and flourishing local government fiscal crises are all consequences some attribute to sprawl.

An often-cited solution to these consequences is "Smart

USGS satellite imagery of a subdivision in Colorado Springs, CO

Growth." The American Planning Association defines Smart Growth as:

> "the planning, design, development and revitalization of communities to promote a sense of place, the preservation of natural and cultural resources, and the equitable distribution of the costs and benefits of development. Smart Growth enhances ecological integrity over the short and long term and improves quality of life by expanding the range of transportation, employment, and housing choices in the region in a fiscally responsible manner." [6]

Smart Growth is an oxymoron to opponents, who view compact developments as innately limiting our choices. Attempts to block sprawl in Whitefish, Montana, left one resident upset about the consequences. "Slam the door on these parcels," Dave Skinner said, "and the people who are moving here anyway will just jump over to the next-closest lands. So we get higher land prices, less school money for the children, less affordable housing, longer commutes, and a randomly fragmented landscape." [7] For Skinner, the problems of sprawl are clear, but the solution is inadequate.

When Mayor Martin Chavez of Albuquerque, New Mexico, opened a forum called "Density, Variety and Choice" he said, "the two things Portland [Oregon] residents hate the most are density and sprawl," and then he aptly noted "and I think therein lies the dilemma." [8]

Measuring Sprawl in the Metropolitan Rockies

Past studies of sprawl commonly cite the following general characteristics:

- ·scattered or leapfrog development,
- ·commercial strip development,
- ·uniform low-density development, or single-use development (with different land uses segregated from one another, as in bedroom communities.) [9]

However, utilizing the methodology of national studies of sprawl may be insufficient. The distinctive urban dynamic here in the Rocky Mountains reflects aspects of the region's unique topography, aridity, and land ownership patterns, making comparison with urban areas in other parts of the country unsuitable. Moreover, the region's propensity towards low-density lifestyles that value owning access to the region's scenic open space amenities creates a problem of exurban or rural sprawl. Metropolitan areas of the Rockies are a distinguishing study in contrasts, where urban areas abut working landscapes, public lands, and exurban ranchettes. There exists a clear need for an index of sprawl that represents these characteristic traits of the metropolitan Rockies.

There are several steps in the analysis used by the Colorado College Rockies Project in analyzing sprawl.

Principally, an analysis of density at varying geographies both within and around urban areas is the way we have opted to measure sprawl here in the Rockies. Most studies have looked at the ratio of the total population of the urban area relative to the land area of the metropolitan region. A better surrogate for analyzing sprawl as a condition of land-use change uses residential housing unit densities per acre of developable land, or land that has no barriers to being developed at urban densities. [10]

Data from the 2000 Census has been used in a geographic information system (GIS) to calculate residential housing unit density (acres per housing unit) at the Census Block level, the most refined geography for data available. Areas like cemeteries, schools, federal lands, state lands, and Native American reservation lands were then removed from the analysis to obtain an estimate for private land that can be developed. Spatial data from the Bureau of Land Management's Gap Analysis program was used to identify privately owned census blocks. [11]

Second, each block was classified according to a schematic developed by Dave Theobold of the Natural Resource Ecology Laboratory at Colorado State University: [12]

- ·Urban – Less than one acre per housing unit
- ·Suburban – 1 to 1.75 acres per housing unit
- ·Exurban – 1.75 to 40 acres per housing unit
- ·Rural – Greater than 40 acres per housing unit
- ·No Housing Units

This classification scheme allows for identification of different aspects of residential development and visualization of the spatial extent of development with a map. **Figure 1** illustrates these development patterns for the greater Boise region in Idaho.

Finally, a set of five metrics was developed to measure sprawl in the metropolitan areas of the Rockies.

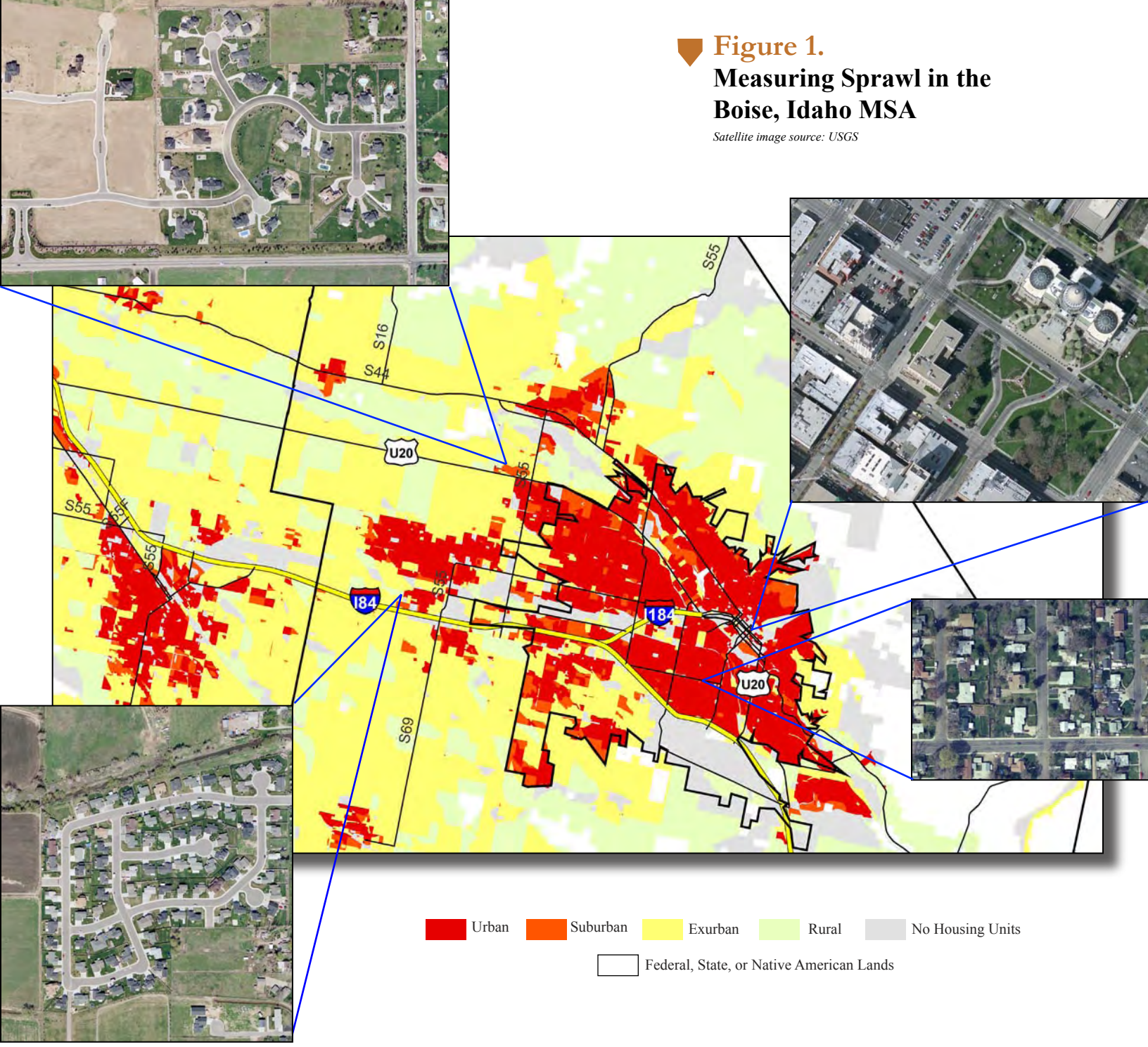
Density of the Urban Area – utilizing the most recent National Land Cover dataset developed by USGS, an urban boundary of each city was used to delineate one geography for density calculations. Utilizing a land-cover dataset rather than a political boundary allows for inclusion of many "cities" that constitute an urban area. Moreover, it is an accurate representation of the urban extent of a city that is independent of current political annexations.

Density of the Urban Core – a compact, concentrated downtown is an indicator of the efficiency of a city. More centralized downtowns are more likely to have more efficient infrastructure and more vibrant and vital business and social characteristics. Such city centers provide a lively, compact area where leaders in business, communications, the arts, and government can interact. This area is defined as ¼ of the urban area with a center point of the central business district.

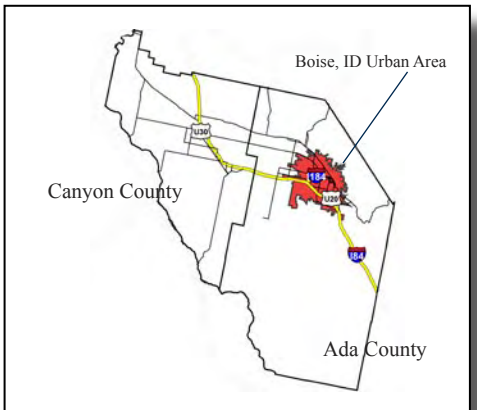
Density of Areas of Residential Housing Boom – Sprawl affects areas beyond the urban boundaries in profound ways. We opted to look at areas of residential housing boom where more than half of the homes in the area were built during the 1990s. This data is available at the block-group level, a

Figure 1.
Measuring Sprawl in the Boise, Idaho MSA

Satellite image source: USGS

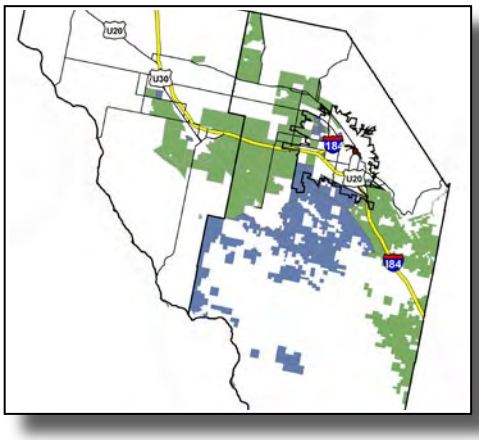


Urban
Suburban
Exurban
Rural
No Housing Units
Federal, State, or Native American Lands



USGS Land Cover definition of the Boise Urban Area

Boise Urban Core measured as 25% of the total Urban Area - a radius of 2.1 miles from the central business district



Residential areas primarily built during the 1970s

Residential areas primarily built during the 1990s

slightly larger geography than the census block level, and so block-groups were identified so that densities of the blocks contained therein could be explored more carefully. Block-groups in any of the counties making up the Metropolitan Statistical Area were included if they had more than half of their housing units built during the 1990s. This methodology explores the way in which areas with strong commuting ties to an urban area are being affected. It also acts as an indicator of recent development impacts.

The Expansion Estimate – Using a similar methodology to the Housing Boom metric, the expansion estimate identifies census block-groups that had more than half of their homes built during the 1970s and uses the previously identified separate set of block-groups that had more than half of their homes built during the 1990s. By comparing the average distance from the Central Business District of areas that were primarily developed during the 1970s to the average distance from the CBD to areas that were built mostly in the 1990s, we can estimate the degree of expansion during the past three decades or so. The percent growth in this distance over this three decade time period was used to normalize the data for comparison purposes. This metric is essential for measuring sprawl as a process of development, rather than taking a more static approach as in the other metrics.

Acres of Exurban Development per Capita – The final metric calculates the acres of low-density exurban developments (1.75 – 40 acres per housing unit) per capita. This metric acts as the exurban "footprint" of the metropolitan area.

The geography for each of these areas is also depicted in **Figure 1** for the Boise, ID Metropolitan Statistical Area (MSA). Admittedly, our sprawl index falls victim to the most common misconception of sprawl; that sprawl is virtually synonymous with low-density residential development. Difficulty in finding variables to evaluate the relative degree of mixed land uses in an urban region for every metropolitan area in the eight Rocky Mountain states prevented inclusion of a set of mixed-use metrics. Residential densities are, however, more likely than non-residential uses to be sound indicators of sprawl according to past studies. The notion that agglomeration economies and land-use restrictions are more likely to concentrate non-residential uses adds validity to these insights. [13]

Rating Sprawl in the Metropolitan Rockies

Our sprawl index has been calculated from each metric described above, using the Z-score approach found in the Methods section. Calculations were performed for each Metropolitan Statistical Area in the Rocky Mountains, as defined by the Office of Management and Budget at the time of the 2000 Census (*See* **Table 1**). These definitions include all counties that contain a major urban area and those adjacent counties that are deemed highly associated with the urban area through commuting trends. Metropolitan areas were separated into two groups, MSAs with a population of greater than 50,000 people, and MSAs with less than 50,000 people. Finally, the Sprawl index was normalized to a scale of 100 for both smaller and larger metropolitan areas. Scores higher than 100 can be considered more sprawling than the regional norm and scores lower than 100 are less sprawling. The results of the Sprawl Index can be found in **Tables 2 and 3**. It should be noted that the sprawl index is a relative, rather than absolute score, and that indexes between larger metropolitan areas and smaller ones in the

Table 1.
Metropolitan Statistical Areas of the Rockies (2000)

Albuquerque, NM MSA
Bernalillo County
Sandoval County
Valencia County

Billings, MT MSA
Yellowstone County

Boise City, ID MSA
Ada County
Canyon County

Casper, WY MSA
Natrona County

Cheyenne, WY MSA
Laramie County

Colorado Springs, CO MSA
El Paso County

Denver-Boulder-Greeley, CO CMSA
Boulder County
Denver, CO PMSA
Adams County
Arapahoe County
Denver County
Douglas County
Jefferson County
Greeley, CO PMSA
Weld County

Flagstaff, AZ-UT MSA
Coconino County, AZ
Kane County, UT

Fort Collins-Loveland, CO MSA
Larimer County

Grand Junction, CO MSA
Mesa County

Great Falls, MT MSA
Cascade County

Las Cruces, NM MSA
Dona Ana County

Las Vegas, NV-AZ MSA
Mohave County, AZ
Clark County, NV
Nye County, NV

Missoula, MT MSA
Missoula County

Phoenix-Mesa, AZ MSA
Maricopa County
Pinal County

Pocatello, ID MSA
Bannock County

Provo-Orem, UT MSA
Utah County

Pueblo, CO MSA
Pueblo County

Reno, NV MSA
Washoe County

Salt Lake City-Ogden, UT MSA
Davis County
Salt Lake County
Weber County

Santa Fe, NM MSA
Los Alamos County
Santa Fe County

Tucson, AZ MSA
Pima County

Yuma, AZ MSA
Yuma County

Table 2. Sprawl Index for the Largest Metro Areas of the Rockies

MSA	Average Distance of New Homes Built in the '70s from the CBD (miles)	Average Distance of New Homes Built in the '90s from the CBD (miles)	Residential Housing Boom Density (Areas Primarily Built in the 1990s)	Density of the Urban Area	Density of the Urban Core	Acres of Exurban Development per-capita (Exurban Footprint)	Vehicle Miles Driven per-capita 2000	Average Utilities Expenditure per-capita for the Central City ($)	Average Total Expenditure per-capita for the Central City ($)	Sprawl Index
PROVO-OREM, UT	11.81	12.64	3.42	0.50	0.34	0.21	17.95	$215	$739	13
LAS VEGAS, NV	9.92	16.87	1.84	0.75	0.64	0.14	18.62	$264	$3,595	53
RENO, NV	5.87	8.97	2.20	0.91	0.57	0.10	20.14	$0	$989	58
BOISE, ID	7.71	10.49	3.28	0.76	0.42	0.51	18.35	$32	$2,720	64
PHOENIX, AZ	12.27	18.50	1.76	0.93	0.77	0.15	19.86	$651	$3,196	71
DENVER, CO	0.75	1.18	2.19	1.08	0.49	0.26	21.56	$319	$4,725	74
SALT LAKE CITY, UT	5.68	12.71	1.87	0.78	0.75	0.15	18.75	$339	$3,545	83
TUCSON, AZ	9.23	13.94	2.70	0.80	0.70	0.63	19.98	$325	$3,061	93
COLORADO SPRINGS, CO	4.31	13.18	2.61	1.01	0.80	0.46	18.77	$1,136	$3,621	160
ALBUQUERQUE, NM	8.13	12.80	3.14	1.17	1.22	0.38	21.23	$380	$3,168	161
PUEBLO, CO	5.13	5.16	6.56	1.20	0.59	0.74	21.06	$172	$789	162

Table 3. Sprawl Index for Smaller Metro Areas of the Rockies

MSA	Average Distance of New Homes Built in the '70s from the CBD (miles)	Average Distance of New Homes Built in the '90s from the CBD (miles)	Residential Housing Boom Density (Areas Primarily Built in the 1990s)	Density of the Urban Area	Density of the Urban Core	Acres of Exurban Development per-capita (Exurban Footprint)	Vehicle Miles Driven per-capita 2000	Average Utilities Expenditure per-capita for the Central City ($)	Average Total Expenditure per-capita for the Central City ($)	Sprawl Index
GREAT FALLS, MT	5.22	0.00	0.00	0.62	0.44	0.42	15.68	$60	$606	8
MISSOULA, MT	10.36	3.46	3.78	0.58	0.44	0.51	20.59	$0	$595	29
CHEYENNE, WY	4.09	3.86	1.80	0.69	0.50	0.43	25.71	$222	$3,976	38
CASPER, WY	6.78	0.00	0.00	0.75	0.84	0.35	20.97	$125	$998	55
YUMA, AZ	5.53	9.41	1.40	0.83	0.52	0.36	18.89	$126	$1,246	68
BILLINGS, MT	2.36	3.46	0.80	1.00	0.71	0.69	16.13	$91	$2,802	103
POCATELLO, ID	3.72	3.54	2.05	1.14	0.92	0.41	20.71	$87	$650	114
SANTA FE, NM	11.84	8.32	4.39	0.96	0.70	1.02	25.47	$312	$2,065	132
FLAGSTAFF, AZ	24.74	35.31	4.34	0.66	0.61	1.47	53.47	$119	$995	157
GRAND JUNCTION, CO	2.25	4.35	2.15	1.43	0.85	0.64	20.23	$101	$1,364	176

Note: all data provided is from the U.S. Census Bureau for 2000 except the Vehicle Miles Driven per-capita figures, which are from the U.S. Department of Transportation's Federal Highway Administration, and the annual expenditure per-capita figures, which come from the Census Bureau from 1997. All density data is shown as acres per housing unit unless otherwise noted.

Governance of Expanding Urban Areas

Grappling with growth and change increasingly requires unique intergovernmental collaborations. In the greater Denver area, columnists have noted that the "United Nations-like" assemblage of governments, comprised of 42 towns and cities and 9 counties, continually fails to reach consensus on important growth issues.[14] The division between counties, which tend to support growth for the property tax revenue it brings, and cities, which tend to curtail growth because of the added infrastructure costs, generally marks the divergence. Although the city-county growth management dynamic is not always this black and white in the Rockies, similar episodic and ad-hoc decision-making is widespread.

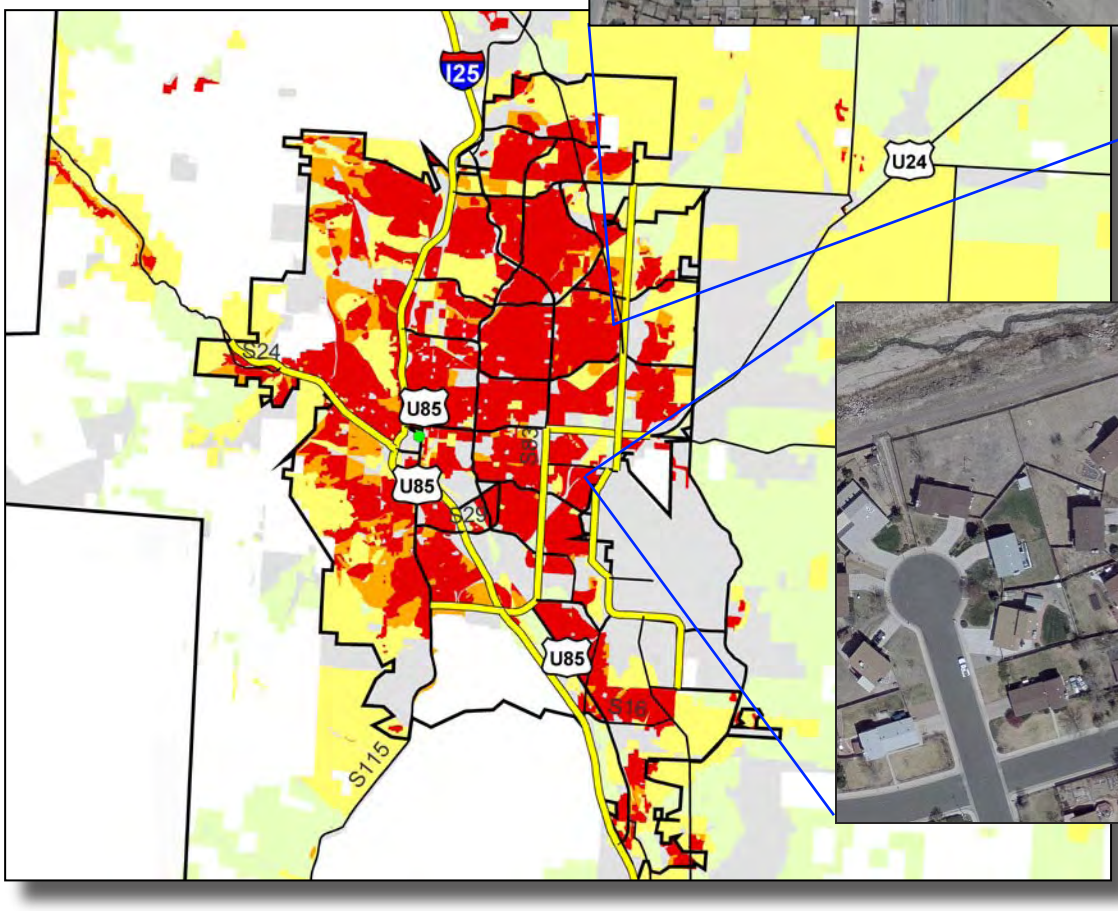
In Missoula, Montana, the choice of whether to sprawl or infill has reached a fulcrum. The city council of the late 1990s saw infill development as a way to create more housing supply to meet the demand and keep prices closer to an affordable level for Missoula residents (note that the average distance of new home construction from the CBD dropped from 10.36 miles in the 1970s to 3.46 miles in the 1990s – **Table 3**). Now, permits to build infill housing on lots within city boundaries are largely being denied for evading the Montana Subdivision and Platting Act, as city

Figure 2. Sprawl in the Colorado Springs, Colorado MSA

Satellite image source: USGS

Big-Box

A big-box store and stripmall begin construction near the eastern edge of Colorado Springs



Urban Suburban Exurban Rural No Housing Units

Federal, State, or Native American Lands

A deteriorating scenic viewshed

This progression shows an overview of a construction site that threatens the view of the scenic Garden of the Gods Park. The aerial photos depict us looking down upon the view corridor of the first photograph.

council members feel that cheap housing is deteriorating the downtown quality of life. [15]

In Albuquerque, the Rio Rancho county subdivision has seen housing upstarts skyrocket. Jim Folkman of the Home Builders Association of Central New Mexico says this is because "it takes longer to get through the development process in Albuquerque." [16] As Mayor Chavez noted, "All too often, in the name of planned growth and infill, we penalize people wanting to grow on the perimeter…we're getting the opposite of the intent – we're getting regional sprawl." [17]

In Santa Fe and Cheyenne, "checkerboard annexation" has created a "jigsaw jurisdiction" and outdated planning has left the cities and counties struggling to keep pace. [18]

In Pueblo, Colorado, the Pueblo West area (spawned from the same developer who brought the London Bridge to Lake Havasu City) has grown at nearly three times the rate of the neighboring central city. The new area is young and considerably more affluent than Pueblo, yet their tax burden is noticeably lower. Nearly half of Pueblo School District 70 is comprised of Pueblo West children, yet the new area does not want to incorporate or become a separate school district. [19]

While the idea of reconciling this piecemeal governance of our urban areas is appealing to many, others resist the temptation to give the county more control over land-use decisions. Too often, we object to city-county partnerships because we think they will result in non-disputed decisions to expand, rather than conflict resolution and clear decisions about vital issues like transportation planning, air quality, solid-waste disposal, and workforce development. In order to move beyond this stalemate, we need to think like one editorial writer from the *Albuquerque Journal*: "No community can control its own destiny, growth-wise. We're all in this together. We all need to cooperate through real, regional institutions that have real power." [20]

The Costs and Consequences of Sprawl

Ever since the landmark publication of the "Costs of Sprawl" in 1974 and then the "Costs of Sprawl Revisited" [21] more recently, concern over whether low-density development increases community expenditures for vital services like water, sewer, fire, police, and school services has led the debate over sprawl-related issues. But does it cost more to sprawl in the Rockies? Does sprawl seem to be associated with rental and housing affordability, vehicle dependence, socio-economic turmoil, and other commonly cited consequences?

To test these theories, we have developed a correlation matrix containing over 20 variables, to see if our measure of sprawl (low density, expanding residential developments) is associated with some of the most commonly cited consequences of sprawl (for more information on correlation measures please *see the Methods section*). Most basically, correlations measure degrees of "association" between variables but not necessarily causation. A summary list of variables is included in **Table 4**.

Table 4. Variables tested using Pearson's Correlation Coefficients against the Sprawl Index:

- ·Home owner vacancy rate
- ·Rental vacancy rate
- ·% of Population that is foreign born
- ·% of Population comprised of ethnic minorities
- ·Method of commuting to work (drove alone, walked, used public transit)
- ·Average commute time
- ·Income distribution
- ·Poverty levels
- ·Housing and rental affordability
- ·Vehicle miles driven
- ·Average life expectancy
- ·Self-rated health status
- ·Per-capita incidences of major depression
- ·Recent drug use
- ·Expenditures per-capita for police and fire protection
- ·Utilities expenditures per-capita

Table 5 shows the significant results of these correlations for the larger Metropolitan Statistical Areas. The correlation between expenditures per-capita of residents of the Central City for Utilities was strong and statistically significant, indicating that utility expenditures of central municipalities tend to increase on a per-capita basis as sprawl increases. County-level expenditures for secondary and elementary schools per-capita displayed a similar relationship with our expansion variable, but no significant relationship with our sprawl index. Strong relationships exist with the Sprawl Index and method of travel to work, indicating that sprawling areas are more associated with vehicle dependence, while more people tend to use mass transit in less sprawling areas. Two other noteworthy findings indicate that as sprawl increases in larger metro regions of the Rockies, rental costs tend to skyrocket and incidences of major depression per-capita also tend to increase. Has sprawl got you down lately?

Table 6 shows the significant results of the correlations for the smaller MSAs in the Rockies. County expenditures per capita for elementary and secondary schools are associated with higher levels of sprawl as are longer commutes. No additional data was associated with the sprawl measurements in the smaller metropolitan areas. Associations may be less strong because growth dynamics are not as consistent between these MSAs. Contrasting growth in Great Falls, MT where population has declined over the past three decades, with growth in Santa Fe, NM over that same period reveals this discrepancy.

Table 5. Significant Correlations for Larger MSAs

	Large Metropolitan Sprawl Index	Large Metropolitan Expansion Estimate
Central city utility expenditures per-capita (1997)	0.559	-
County expenditures for elementary and secondary schools per-capita (average of 1992, 1997, and 2001)	-0.208	0.545
Percent of people who drove alone to work	0.612	-
Percent of people who used public-transit to get to work	-0.522	-
Percent of renters whose rent costs were more than 25% of income	0.661	-
Incidences of major depression per capita	0.515	-

Table 6. Significant Correlations for Smaller MSAs

	Large Metropolitan Sprawl Index
Average commute time to work	0.559
County expenditures for elementary and secondary schools per-capita (average of 1992, 1997, and 2001)	-0.208

Rural Sprawl

While this section of the 2005 Report Card looked to evaluate sprawl in the metropolitan Rockies, the issue of rural sprawl and the proliferation of the 35-acre ranchette may be the most serious land-use problem facing the region. As the market demand for large-lot second, third, and in some instances, fourth homes steadily increases, the quality and size of farm and ranchland in the Rockies has simultaneously declined. Due attention to this issue will surely be a part of future State of the Rockies Report Cards.

Conclusions

What do we make of this analysis and our findings? Growth and development are a reflection of us, the citizens of the west, and our connections to our surroundings. Whether our urban patterns will ultimately be a reflection of our passivity or a triumph of our collaboration is still to be determined.

In Arizona, a developer is being sued for "moonscaping the desert," blading state trust lands, killing bighorn sheep, and destroying Hohokam archaeological sites.[22] In and around Denver, communities are "desperate for downtowns" scouring out vibrant areas that evoke Old West origins out of the carcass of empty shopping malls. [23]

What will be our legacy? As Wayne Lemmon points out in his essay "The Anti Sprawl Mantra" for the *Planning Commissioners Journal*, regardless of your perspective on sprawl and growth in general, "Which land is consumed, and which land is left in 'natural' or rural state can be a matter of conscious policy rather than market forces." [24]

If we can take Lemmon's advice to heart, maybe we can act together as citizens of the Rockies to take the next step by generating an empathy for our built environment similar to what many hold for our natural surroundings.

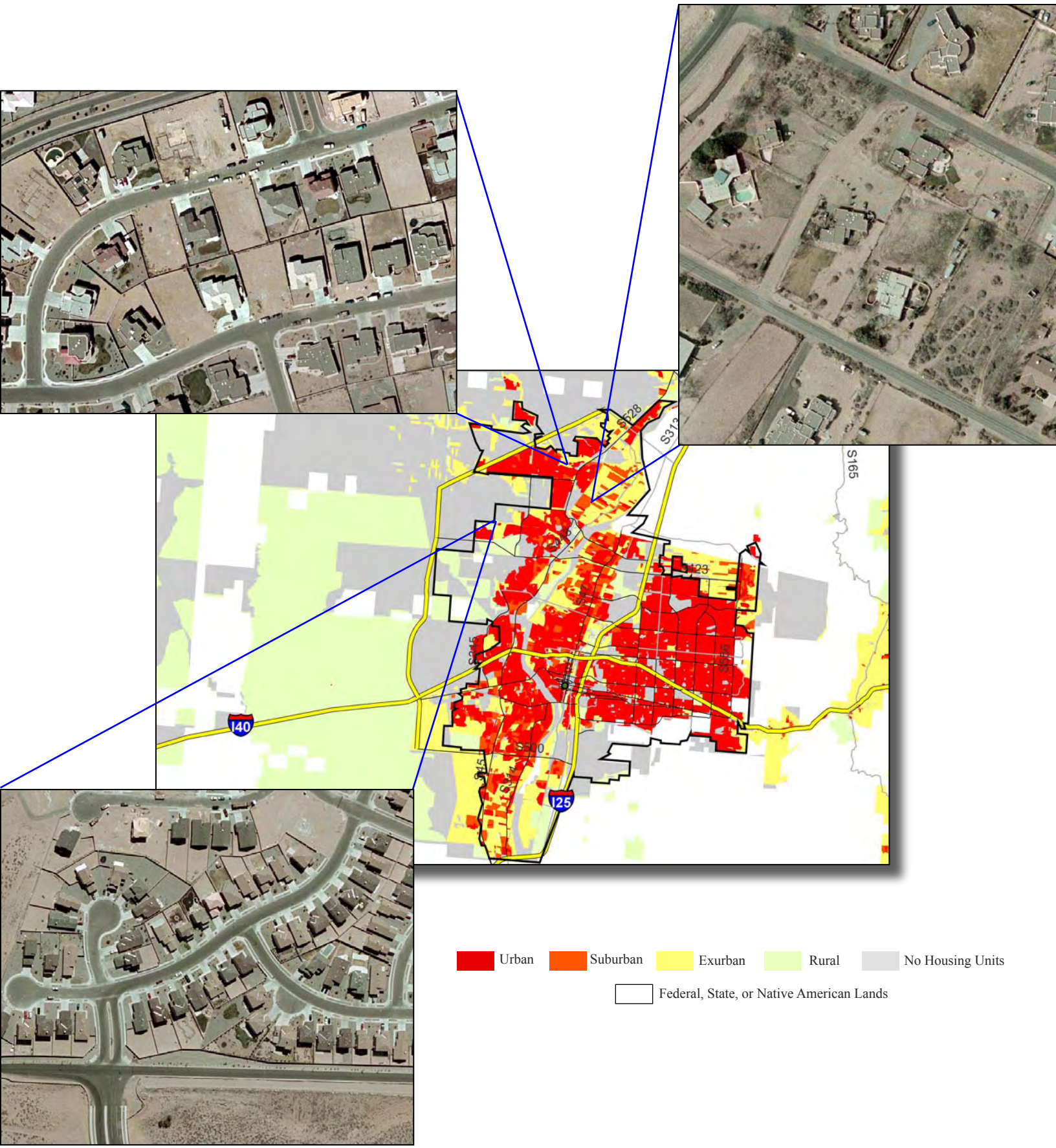


Figure 3. Sprawl in the Albuquerque, New Mexico MSA

Satellite image source: USGS

Native American Tribes

By Walter E. Hecox, Rebecca Schild and Chase Whitney

Regaining Sovereignty

Success Cases

Challenge calls for response! During the 2004 Colorado College State of the Rockies Conference, Charles Wilkinson spoke eloquently to the topic: "Endurance and Sovereignty Among the Indian Nations of the Rocky Mountain West," saying at one point:

> "Over the past two generations the tribes have achieved dramatic successes, heartwarming successes and historic ones. Tribal governments now are clearly the real governments in Indian Country." [1]

Intrigued by the stories Charles related in his talk, the State of the Rockies Project has tackled the issue of Native American "re-sovereignization." We have explored a series of case studies that illuminate what is happening among Native Americans in the Rockies, both in their lives and within their sovereign nations.

We proceed first by defining "sovereignty" in relation to Native Americans. Then we relate a series of thumbnail sketches that bring substance and reality to abstract concepts such as re-sovereignization.

What is Sovereignty?

How should we apply the term "sovereignty" to Native Americans? For answers we first look to the National Congress of American Indians, established in 1944 and now the oldest and largest tribal government organization in the US. They state clearly their view on sovereignty: "Indian Nations are sovereign governments, recognized in the U.S. Constitution and hundreds of treaties with various U.S. Presidents. Today, tribal governments provide a broad range of governmental services on tribal lands throughout the U.S., including law enforcement, environmental protection, emergency response, education, health care, and basic infrastructure." [2] However, one must keep in mind that, in the words of the great Chief Justice John Marshall, tribes are "domestic, dependent sovereigns" over which Congress has plenary authority. The challenge facing tribal governments is to maintain and exercise their powers of self-government in the context of their relationship with the federal government and state governments.

Next we consider the perspectives of The Harvard Project on American Indian Economic Development. In their soon to be published book "Native America at the New Millennium," funded by the Ford Foundation, they start by admitting that the term sovereignty has multiple meanings, interpretations, and implications -- even when applied to Indian affairs. The Harvard Project specifies that at the term's core is "the inherent right or power to govern." From the earliest days of contact between Europeans and Native Americans, "…Indian nations were, by necessity and nature, sovereign; and the colonists treated tribes as foreign nations, leaving them to regulate their own internal affairs. The colonial powers and later the federal government clearly recognized the sovereign status of the tribes." The Harvard Project lists three dimensions to tribal sovereignty:

> "(1) Indian tribes possess inherent power over all internal affairs; (2) the states are precluded from interfering with the tribes in their self-government; and (3) Congress has plenary power to limit sovereignty. In other words, tribes possess all powers of self-government except those that Congress has specifically removed. Tribal governments, as independent political entities, have the inherent right to make their own form of government, to determine their own citizenship, to make their own civil and criminal laws and be ruled by them in tribal courts, to license and regulate, and to tax. Tribal governments are responsible for a diverse range of government functions, which include but are not limited to: educating their citizens, providing law enforcement and administering justice, developing economic, social and cultural programs, building infrastructure, and entering into contracts and agreements with other political entities." [3]

Working from this broad sketch of tribal sovereignty, we find encouraging news about what is happening among Native American people of North America in general, and around the Rockies in particular. Observers such as Charles Wilkinson and the Harvard Project agree: there is incredible resilience of Native Americans in the face of centuries of adversity and threat.

> "Storms of oppression, racism, disease and attempted extermination have blown over the American Indians as fiercely as over any people in history. Yet with a tenacity that breeds its own offspring in the face of odds so stacked against survival for the last 500 years, America's Native people enter the 21st Century self-defined by their tribal identifications. Now is a time of proactive striving by Native Americans, individually and collectively, to establish their own fabrics of life by their own designs." [4]

Wilkinson corroborates a resurgence of hope and action in what he describes as an Indian revival during the second half of the twentieth century that "…deserves to be recognized as a major episode in American history. The modern tribal sovereignty movement can fairly be mentioned in the same breath with the abolitionists and suffragists of old and the contemporary civil rights, women's, and environmental movements." [5] He goes on to attribute this "resurgence" to the Native Americans themselves:

> This movement presents a fascinating saga, … in part because the successes run counter to widely held assumptions. The fact of the progress, no less its extent and nature, is not commonly understood. Further, this is not a story of what federal officials have done for Indians. The vision and actions of Native Americans themselves created the deep change. Tribal leaders … learned how to use the political and legal system to create a framework within which progress could be made. Then they put those laws and policies to work by painstakingly building creative and effective institutions and programs at home, on the reservations. The modern Indian movement has put on grand display America's truest nobility – its commitment to give dispossessed peoples the chance to thrive -- but it took the passionate and informed determination of Indian people to activate that impulse." [6]

What are the dimensions to this "resurgence?" The Harvard Project picks out four major themes from across the spectrum of social, economic, political, and environmental challenges facing tribes:

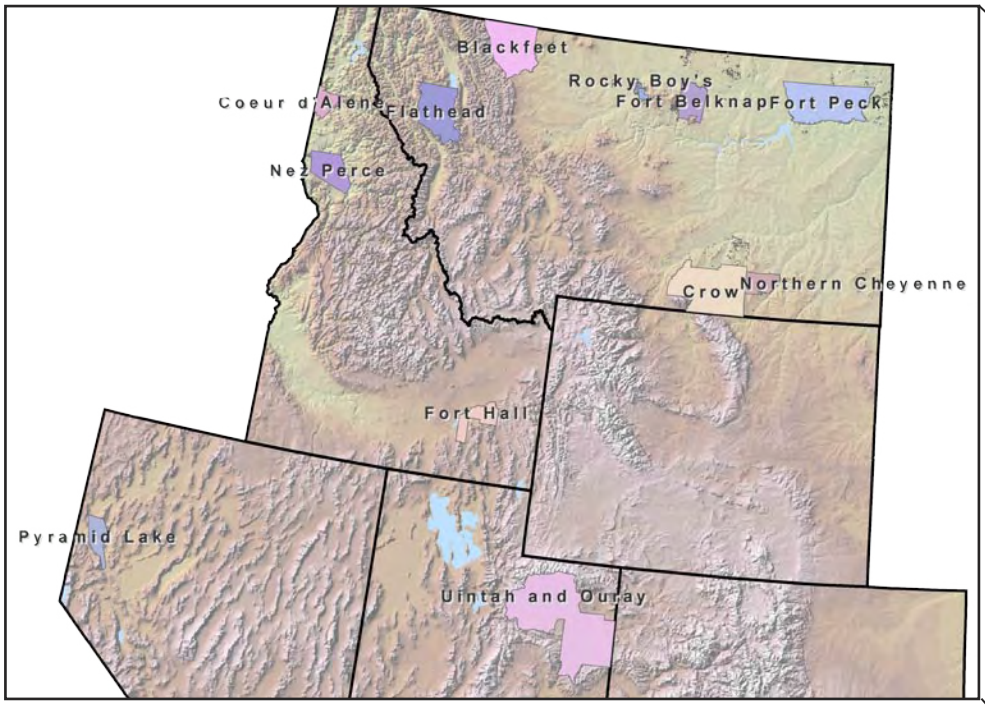
- *Self Governance*: strengthening tribes' institutions of governance to more effectively assert their sovereignty
- *Economic Development*: diversifying their economic strengths to better improve their citizens' well being
- *Social Reconstruction*: innovating their social policies by drawing upon the experience of both the Indian and non-Indian worlds; and
- Culture and Identity: tapping and developing their cultural resources – traditional and emergent. [7]

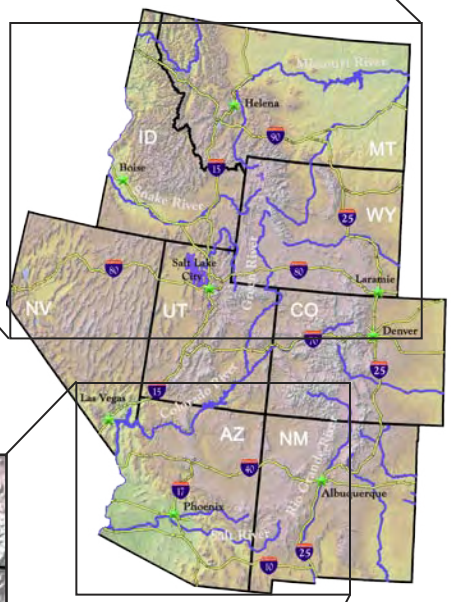
Native American Fabrics and Designs for Re-Sovereignization Around the Rockies: Case Studies

The enthusiasm and passion of a keen observer of Native American re-sovereignization like Charles Wilkinson, and the authority brought to the subject by the Harvard Project on American Indian Economic Development are contagious. The Rockies Project has spent six months sifting through dozens of examples of what Native American individuals, communities and tribes are doing to exercise their sovereign authority and regain self-governance in areas of culture and language, social and political conditions, and environment and natural resources. All reflect two observations:

- "At the turn of the new millennium, American Indians face old challenges armed with new-found strengths, and new obstacles braced by deep traditions." [8]
- "Indian tribal sovereignty is one of the noblest ideals … – every bit as much so as the ideals of freedom or justice, to which tribal sovereignty is closely related. But claims to sovereignty never come easy, especially for small, ethnic governments within a much larger and more powerful sovereign entity." [9]

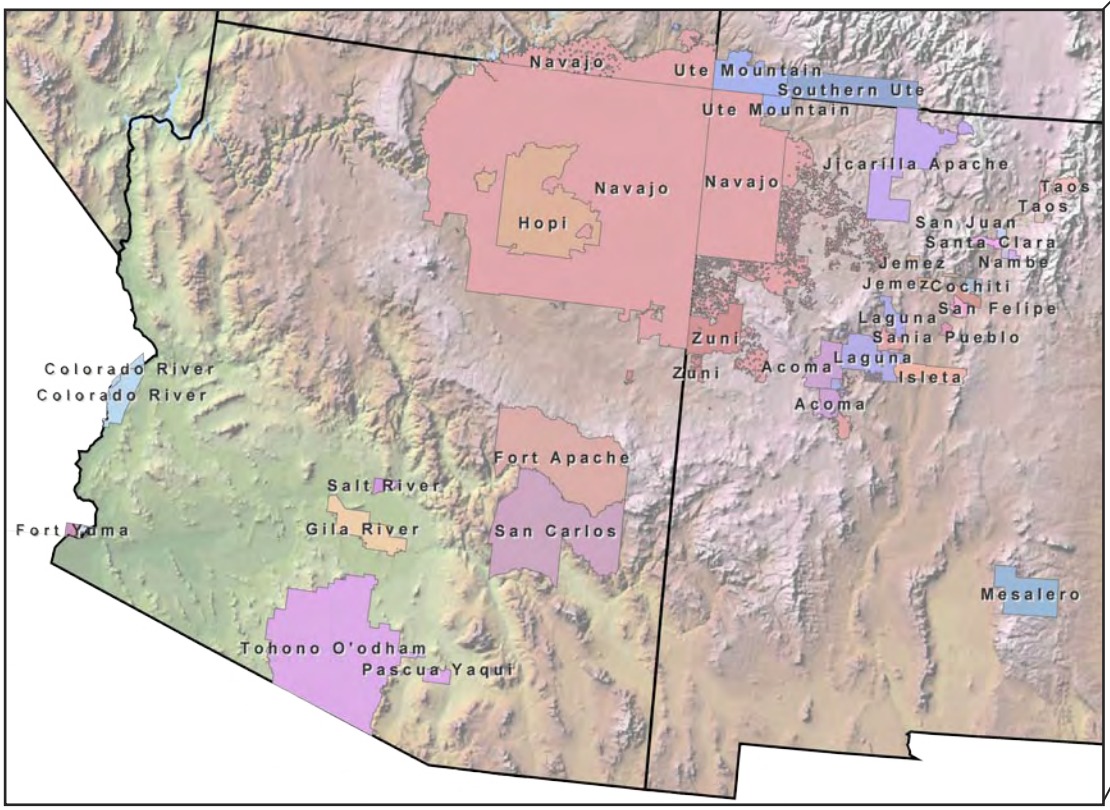
For every example presented by the Rockies Project, there is much additional information that expands upon the brief "thumbnail" sketches we provide. And there are dozens of other examples among Native Americans around the Rockies and nationwide that further kindles hope that this American ethic group, so dispossessed of dignity and power for so long, is indeed regaining sovereignty.





Rockies Native American Tribes

(only largest areas, ~ population 1,000+, shown)



City of Albuquerque v. Browner: Landmark Court Decision

Isleta Pueblo, New Mexico

Issue:

In 1996, the city of Albuquerque filed a complaint challenging EPA's approval of the Pueblo of Isleta's water quality standards on numerous grounds, presenting the first challenge of Native American sovereignty over water resources. Albuquerque operates a waste treatment facility that dumps into the Rio Grande River five miles upstream of the Isleta Pueblo Reservation. The reservation's water quality standards adopted in 1994 are more stringent than the state of New Mexico, thereby requiring Albuquerque to ensure that upstream water meet such standards. Thus, upgraded technology would be needed to meet the higher tribal standards, with an estimated cost of $58 million. The city of Albuquerque brought suit against the EPA, challenging the validity of EPA's approval of the Pueblo's water quality standards.

Background:

In 1987, Congress amended the Clean Water Act, authorizing EPA to treat Indian Nations as states with regard to the Clean Water Act. Thus, tribes were granted jurisdiction to govern their own water resources, and thereby determine their own water quality standards. Isleta Pueblo was the first Indian tribe in the country to develop its own standards under the amended Clean Water Act.

Action/Resolution:

The court found EPA's approval of the Isleta standards in line with the amended Clean Water Act. This was a landmark decision, which set the precedent that tribes have sovereignty and government jurisdiction over water quality and are treated just as states with regard to the Clean Water Act. The court also upheld "that tribes may establish water quality standards that are more stringent than those imposed by the federal government . . . because it is in accord with powers inherent in Indian tribal sovereignty." (97 F.3d 415, 1996 U.S. App., LEXIS 26314, pg. 7). Furthermore, these standards were justified because of prevailing drought conditions, the need to protect sensitive subpopulations, and the purpose of certain ceremonial uses. The EPA required Albuquerque to upgrade its water treatment facility as a result of this litigation. As of 1998, Albuquerque had implemented $58 million of new sewage-treatment equipment, providing water discharges clean enough to meet Isleta standards. This important court decision strengthened tribal governments' power to maintain and control their natural resources, allowing Indian Nations around the country to adopt similar measures.

Contacts/Sources:

· City of Albuquerque v. Carol Browner, 97 F.3d 415, 1996 U.S. App., LEXIS 26314
· "City Waste Water Meets Standards." Albuquerque Tribune. November 24, 1998, pg. D8.
· Soussan, Tania. "Water Plant Upgraded." Albuquerque Journal. November 23, 1998, pg. C8.

Connecting the Navajo

Navajo Nation: New Mexico, Arizona, Utah

Issue:

Sixty percent of the 210,000 residents on the Navajo Reservation are without phone service. With the cost of connecting some homes with a landline reaching up to $100,000, it is obvious that the traditional infrastructure isn't the solution. The mobile phone infrastructure is also inadequate. For those who can afford cell phones, service is unreliable and difficult to receive at some locations.

Background:

The Navajo reservation is not the only location in the country where receiving phone service is a challenge. Many isolated areas are at a loss for physical telephone service. To overcome the huge cost disparity of connecting remote areas to phone service, most landline and wireless phone customers pay a federal and state universal service charge that is paid primarily to phone companies in markets where connection costs are high. This subsidy will be essential in connecting the Navajo reservation, but as consumers begin to use other services such as Internet calling and loopholes in wireless calling, the amount of money going into this universal fund is shrinking nationwide.

Action/Resolution:

Despite shrinking funds, the solution to connecting the 25,000 square mile reservation might reside with a new company with local roots named Sacred Wind Communications. A Navajo-run company, Sacred Wind hopes to create a hybrid system of wireless communications with traditional home service. By incrementally expanding a series of radio towers with repeating capability, the most remote residents will eventually have the comfort and convenience of a telephone. New subscribers will need a receiver, but traditional home phones will be able to connect directly into the system. If all goes according to plan, Sacred Wind will have nearly 22,000 subscribers in the next five years.

Contacts/Sources:

· www.navajo.org
· The Denver Post "An answer to tribe's call" by Tom McGhee, Jan. 9, 2005

Zuni Salt Lake

Zuni Pueblo: New Mexico

Issue:

For nearly two decades the Zuni people have fought a proposed coal strip mine near the sacred Zuni Salt Lake in New Mexico. The tribe was concerned that the pumping of ground water and pollution from the mine would adversely affect the health of the lake. Fears also arose that construction of the mine and its operation would encroach upon "The Sanctuary," an area surrounding the lake that contains tribal burial grounds and shrines and has historically been a neutral zone among tribes.

Background:

Sixty miles south of the Zuni Pueblo in New Mexico, the Salt River Project (SRP), a large utility, had proposed an 18,000-acre coal strip mine to supply an estimated 80 million tons of coal over the next 50 years to the Coronado Generation Station in St. Johns, Arizona. The proposed mine would have been situated eleven miles from the sacred Zuni Salt Lake. Believed to be the home of the Salt Mother deity, the lake is central to the religion and culture of the Zuni and several other tribes. As part of mine operations, the SRP would pump approximately 85 gallons per minute (2.2 billion gallons over fifty years) from the underlying Dakota Aquifer -- primarily to control dust from excavation.

Action/Resolution:

Two federal agencies agreed that the mining permit should not have been approved, but in 2002 Secretary of the Interior, Gale Norton, approved the mine permit under the growing demand of domestic energy supply and security. Addressing Zuni concerns in an amendment to the federal permit, the SRP was required to pump water out of an adjacent aquifer, but the Zuni did not retreat and maintained that the result would be the same regardless of which aquifer was tapped.

In 1999, three years after New Mexico issued its first permit to the SRP and construction of a railroad line was uncovering burial sites, federal officials determined that the Sanctuary surrounding the lake was eligible for placement on the National Register of Historic Places. In 2003, both Zuni Salt Lake and the Sanctuary were placed on the register and on the list of "The Eleven Most Endangered Historic Sites." In August 2003, the SRP relinquished its mining permits and dropped plans to develop the coal mine. Instead of opening its own mine, the SRP decided to procure its coal from an existing mine in the Powder River Basin of Wyoming. The decision is seen as a victory for tribes everywhere in protecting their sacred sites and influencing the national interest.

Contacts/Sources:

· www.sacredland.org "Zuni Salt Lake"
· The Santa Fe New Mexican "Utility Drops Plan for Coal Mine" by Ben Neary. Aug 5, 2003 Tuesday.
· High Country News "Saving a sacred lake; Zuni activist Pablo Padilla" Uncommon Westerners. by Hillary Rosner Feb. 2, 2004

Dine CARE (Citizens Against Ruining our Environment)

Navajo Nation: New Mexico, Arizona, Utah

Issue:

The vast Navajo nation, which sprawls through Utah, New Mexico, and Arizona, is one of the most impoverished reservations, with 80% of households lacking electricity, telephones, or running water. Thus, the Tribe faces continuing pressures and exploitation from development projects that adversely affect their environment, health, and traditional way of life. These problems stem both internally, from tribal government initiatives, and externally, from private development projects and U.S. government legislation.

Background:

Dine CARE originated in 1988 to defend the community of Dilkon, in the Southwestern portion of the Navajo Nation, from the threat of a toxic waste and incinerator dump. The tribal government had already approved the dump, so the community organized and educated itself to successfully fight and stop the toxic waste plans. The all Navajo grassroots environmental organization expanded with the mission of providing innovative solutions to surmount an impoverished communication and information infrastructure, in order to provide a voice and protect traditional beliefs and teachings. Sponsored primarily by foundation grants, members join from all corners of the reservation, with the intention of honoring the relationship with "Mother Earth based on balance and harmony" (http://dinecare.indigenousnative.org), speaking out against issues affecting their communities.

Action/Resolution:

In the late 1980s, the organization led a march on the New Mexico state capitol to successfully advocate the reform of alcohol sales in reservation border towns. In 1990, they co-founded the Indigenous Environmental Network, providing a network for educating Native and non-Native communities alike, and promoting a culturally appropriate, indigenous method for alternative development and environmental protection. In 1991, Dine CARE defended the community of Huerfano, N.M. and its neighboring sacred mountain from a proposed asbestos dump, halting plans altogether. A bigger campaign started in 1994, temporarily stopping reckless timber cutting until environmental studies could be conducted. In conjunction, they started an innovative GIS forest-mapping project, with the intention of reforestation in the Chuska Mountains. One of the biggest successes has been in the reform of the Radiation Exposure Compensation Act in 1988, trying to address victims of radiation exposure on tribal lands. This project is still being tackled, with the hopes of fighting future mining and ensuring all uranium tailings are cleaned-up. The organization's latest concern is to assist 20 Navajo communities threatened by a coal power generating plant. Dine CARE has won international acclaim for using technology to protect traditional landscapes and sacred sites, winning the Intel Environment Award in November 2004.

Some comments from observers:

· "Many traditional peoples are being discriminated against and exploited right on their own native lands, simply because their ways are not 'progressive' or centered around Anglo notions of economic development." (Testimony of Leroy Jackson before Congressional committee on American Indian Freedom of Religion Act, 1993).

· "Many problems have come from poorly managed attempts at economic development which exploit Navajo lands. These problems are plain to see with regard to the environment, but also seriously threaten our cultural heritage." (Chuska Mountain Forests: an Issue of Sovereignty).

· "Tech museum president Peter Giles said the [Intel Environment Award] 'seeks to inspire a new generation of socially conscious leaders who will leverage technology to address the myriad of challenges we face as a global community."

Contacts/Sources:

· Dine CARE
10A Town Plaza, Suite 138
Durango, CO 81301
Telephone: (970) 259-0199
Email: kiyaani@frontier.net
· Draper, Electra. "Group's high-tech efforts to aid Navajo honored." Denver Post. 11/10/04.
· Dine CARE website.
http://dinecare.indigenousnative.org
· Jackson, Leroy. "Chuska Mountain Forests: an Issue of Sovereignty."

Honoring the land and water of Black Mesa

Hopi Reservation: Arizona

Issue:

Peabody Energy, the world's largest private coal company, daily extracts 3.3 million gallons of water from the N-aquifer underlying the Hopi and Navajo Reservations in Arizona. The water is mixed with crushed coal, which is then slurried 275 miles away to the Mohave Generation Station in Laughlin, Nevada. The Hopi people are now challenging the extraction of this water, and the questionable lease agreements that made its extraction possible.

Background:

In 1966, under guidance from their lawyer, John Boyden, the Hopi Nation agreed to lease mining rights to their land to the Peabody Coal Company. Under the agreement, the Hopi and Navajo reservations would split the royalties from the coal extraction and be paid a modest amount for water pumped from the N-aquifer to supply the 275-mile long coal slurry line. Besides the lease agreement being below market value and absurdly small payments for water, the agreement's legitimacy has been called into question because of the possible duplicity of Mr. Boyden. Through personal accounts and correspondence, it has been claimed that Mr. Boyden was working for both the Hopi Nation and the Peabody Coal Company during negotiations in the mid-1960s. Although the lease agreements were amended to better represent the true value of both the coal and the water, members of the Hopi Nation are demanding that the lease be terminated and the pumping of their water stop immediately.

Action/Resolution:

The Black Mesa Trust, a grassroots organization created to safeguard the land and water of Black Mesa, is spearheading the effort. Created in 1999 by the Hopi people, the trust intends to let public opinion have its say on the matter, something they contend did not happen during the original negotiations of the '60s. By presenting evidence of Mr. Boyden's double-dealing, The Black Mesa trust hopes to show that the original lease agreements between the Hopi and Navajo people and Peabody Coal are effectively invalid. During an exhaustive discussion on January 17, 2005, the Hopi Tribal Council agreed to postpone any further agreements with Peabody Coal until April 2005, when the Black Mesa Trust will show further evidence of Mr. Boyden's duplicity.

The goal of the trust may receive some help from the California Public Utilities Commission. In a December 2004 decision, the CPUC unanimously agreed to shut down the Mohave Generation Station at the end of 2005. The shut down is not necessarily permanent, but is contingent upon resolving outstanding coal and water issues that are impeding its profitability.

The executive director of the Black Mesa Trust, Vernon Masayesva, believes that "transporting coal with ground water is ludicrous," and better options should be explored. Using water from a larger aquifer, pumping water from the Colorado River, or building a rail line are all possible options, but Mr. Masayesva and many Hopi believe the water options should be taken off the table.

Contacts/Sources:

· www.hopi.nsn.us "Black Mesa Trust: save aquifer from Peabody Coal Company"
· Home Dance, the Hopi, and Black Mesa Coal: Conquest and Endurance in the American Southwest Charles Wilkinson, Brigham Young University Law Review, 0360151X, 1996, Vol. 1996 Issue 2
· The Associated Press "Hopi runners trek 265 miles to protest coal company's water use" Foster Klug, Aug. 14, 2001 Tuesday

Na-Wa-Hu Program

Sandia Pueblo: New Mexico

Issue:

The difficulty of providing a comprehensive and available health program for Indian reservations has been a continual dilemma for both tribes and the Indian Health Service department. Pressures of increased demand for health services, combined with the lack of adequate government funding, has forced the Indian Health Service to limit its programs. The end result has been the elimination of preventative medicine initiatives and using the few available resources to address acute and chronic care service needs. The tribes are left with the dilemma of increasing health issues and the inability to meet their peoples' needs.

Background:

The leaders of Sandia Pueblo, using financial revenues earned from gaming operations, voted to pursue a more active role in administering, delivering, and financing health care for their tribal members. They recently built a 10,400 square foot "state-of-the art" medical and dental center, at a cost of nearly $3 million. The Pueblo teamed up with HIS, the University of New Mexico Health and Sciences Center, the State of New Mexico, and the private health care sector to implement their vision of community wellness. So far, success has been astounding, and the tribe has been gaining national acclaim for its innovative measures in health

care. In 1999, they received the "Outstanding Service Unit Health Center/Field Clinic Award" from the Albuquerque Service Unit of the IHS. They were also acknowledged by the Kellogg Foundation as a model of rural health care, and nominated for the Harvard Project on American Indian Economic Development, Honoring Nations Program for their exceptional approach in health care delivery.

Action/Resolution:

As a result of their collaborative efforts, the tribe has significantly enhanced its health care. They have greatly increased the availability of general clinic hours and complementary medicine, including acupuncture and chiropractic services. They have also implemented a diabetes screening and intervention program, a multi-tribal substance abuse initiative, a social services program including an assisted living program, and a Health Care Services Trust Fund. Their efforts ensure that all tribal members will have access to health care in future years.

Most notable is the development of the Na-Wa-Hu wellness program and center. This native word, meaning mind, body, and spirit, represents the mission and commitment of promoting community holistic wellness. The center offers regular programs that attempt to address health concerns on a daily basis. After-school activities, such as arts and crafts, sports and fitness, dance, photography, and biking are open to all youth tribal members. There are also day camps for summer recreation, which are designed to develop confidence and good health habits. The outdoor education program works year round to expose youth to environmental issues, adventure recreation, and challenge education. This program will eventually expand to adults and families. In addition, a community garden has been established to rekindle the tradition of agriculture and working with the land, while providing a source of organic produce to the community.

Comment:

· "Sandia recognizes that our destiny is in our own hands and we have assumed a leadership role that we must maintain if we are to succeed in our mission to improve the health status of our people." -Tribal website.

Contacts/ Sources:

· Wellness Center: 505-867-4696
· Sandia Pueblo website www.sandiapueblo.nsn.us

Navajo Tribal Utility Authority

Navajo Nation: New Mexico, Arizona, Utah

Issue:

The Navajo Tribal Utility Authority or NTUA is incorporating renewable energy to help meet the demand for electricity on its reservation. Normally, the tribe would purchase all of its electricity from suppliers off-reservation and transmit that power to residents connected to existing infrastructure on the Navajo Nation. The addition of renewable energy, such as photovoltaic and wind, will certainly not replace that outside generation completely, but it will provide the tribe with a cost effective and tribally owned alternative for those who could not be cost-effectively connected to the existing utility network.

Background:

The Navajo Nation estimates that 14.2 percent of homes on its reservation are without electricity. Of the 1.4 percent of homes in the greater U.S. without electricity, 75 percent reside on the Navajo Reservation. The immense size of the reservation and the great distances that sometimes exist between homes and infrastructure, make connecting isolated homes prohibitively expensive. This is where the incorporation of renewable energy can satisfy a portion of demand at a lower cost than traditional utility services.

Action/Resolution:

In conjunction with SunWize Technology, the NTUA recently completed a residential renewable energy project. The NTUA implemented the program to give the opportunity for residents without service to enjoy the benefits of electricity at a reasonable cost. Using 880-watt solar power stations, the NTUA was able to provide residents with a minimum of 2kwh of electricity per day, and a battery bank capable of supplying a home for five days without needing to be recharged.

Contacts/Sources:

· www.ntua.com "Navajo Tribal Utility Authority"
· SunWize Technologies "Navajo Tribal Utility Authority's Solar Program Commences with SunWize Residential Power Stations" Press Release, Kingston, New York, May 11, 2004.
· U.S. Department of Energy "Renewable Energy Development on Tribal Lands"

Nuclear Waste on The Skull Valley Reservation

The Skull Valley Goshutes: Utah

Issue:

Nuclear waste disposal usually creates the ultimate "not in my backyard" response from those who live near a proposed storage site. But the Goshutes of the Skull Valley Reservation in Utah are for the most part excited about the opportunity to temporarily host thousands of tons of nuclear waste on their land. The temporary disposal sight would be an economic boom for this small 18,000-acre reservation and 500-member tribe, but the plan has its vocal detractors – like the state of Utah.

Background:

To abide by the Nuclear Waste Policy Act of 1982, the federal government sought volunteer candidates to temporarily store spent nuclear fuel until a permanent facility was completed. As stipulated in the act, the Department of Energy (DOE) was required to begin accepting nuclear waste from utilities by 1998 and storing it permanently. In 1992, the Goshutes of Skull Valley took interest in the program named "Monitored Retrievable Storage" or MRS, and began a study of the benefits and impacts of waste storage. In 1995, a $125 million facility with a storage capacity of 40,000 metric tons of spent fuel was proposed. The economic benefit to the tribe would be immense and allow them to increase the size of their reservation and make necessary infrastructure improvements.

The State of Utah and many other opponents saw the storage of nuclear waste as a permanent problem rather than a temporary one. With continuing acrimony surrounding the DOE's permanent storage facility "Yucca Mountain," there are no assurances that the nuclear waste will find its way out of Utah in the foreseeable future. For a state with no nuclear power plants, Utah did not want be in the business of storing the nuclear by-product of other states. Jason Groenewold, director of Healthy Environmental Alliance of Utah, stated, "We need to remember and be very clear that once the waste gets here, no one else is going to take it."

Action/Resolution:

Despite delays due to the possibility of Air Force overflights crashing into the facility, wilderness exemptions, and possible fiduciary mismanagement by the tribe's chief, the storage facility appears to be on track. If no further delays are encountered, the agreement that was signed in 1997 could receive licensing by early this year.

According to Dennis Rockwell, a County Commissioner for Tooele County, which is immediately adjacent to the Skull Valley Reservation, there is a "70% chance that the licensing will be approved." Mr. Rockwell and many others in the area are pragmatic supporters of the Goshutes' decision to host the nuclear waste. "I'm in favor of the Tribe improving their economy," says Rockwell, and in light of the facts, Mr. Rockwell believes that it is important to be on good terms with the Tribe and be a part of the decision making process, rather than to be opposed and have no say at all.

Contacts/Sources:

· www.Skullvalleygoshutes.org
· National Congress of American Indians "Skull Valley Band of Goshute Sign Initial Agreement for Interim Spent Nuclear Fuel Storage Facility"
· The Associated Press "Environmental groups bring protest over nuclear storage to Skull Valley reservation" Oct. 10, 2004, Sunday, BC cycle
· Deseret News (Salt Lake City, Utah) "Goshute N-waste site on track as panel gives OK to rail line" Jan. 1, 2004, Thursday

Pyramid Lake Environmental Program

Pyramid Lake Paiute Tribe: Nevada

Issue:

The Pyramid Lake Paiute Tribe is located 35 miles northeast of Reno, Nevada. Their land sits along the Truckee River which feeds Pyramid Lake, the center of the tribe's economy and cultural traditions. Over the past century, government military operations and expanding communities in Nevada have placed increasing pressures on the integrity of the environment and the health of the native people. Point and non-point sources of pollution, such as urban storm runoff, past and present mining activities and tertiary treated effluent from the Reno/Sparks sewage treatment plant have greatly contributed to water contamination. Coupled with upstream diversions from the Truckee River and drought years, increasing difficulty is placed on the recovery of two Pyramid Lake endangered fish species important to the Tribe's culture and traditional way of life. In addition, the reservation contains the last remaining Northern Leopard Frog species along the river, which is considered a threatened species.

To compound problems, for over fifty years the department of defense has conducted military training and operational activities near the reservation, such as burning munitions at the Sierra Army Depot, torpedo bombing, and low level flyovers by jet aircraft. The tribe complains of elevated cancer rates, calves dying from unknown respiratory conditions, cows with tumors, a declining white pelican population, fish smaller than normal, and a greater rate of children with learning disabilities.

Background:

The Pyramid Lake environmental department began in 1981 with a water-quality monitoring program. It has since expanded to include a wetlands project, funded by a $70,000 grant from EPA, and an air quality program in collaboration with the Department of Defense. In 1944, the U.S. Navy leased 76.5 acres of land from the tribe to establish a land-based torpedo dropping range for the Naval Air Station in Alameda, California. In recognition of their trust obligations from leasing these lands and under the

Native American Lands Environmental Mitigation Program (NALEMP), the Department of Defense, Army Corps of engineers entered into a Cooperative Agreement in May 2002 with the tribal government to address any adverse environmental impacts of military operations on the reservation. Through these various initiatives, the tribe has become nationally recognized for its protection of vital environmental resources.

Action/Resolution:

The water quality program extends to streams and sites along the lower Truckee River as well as Pyramid Lake itself. A new water quality laboratory was completed in the spring of 2002 to analyze and monitor contaminants. The tribe also successfully challenged the state of Nevada's decision to create upstream water transfers from the Truckee River, which would further threaten the existence of the lake and the Lahontan cutthroat trout and the cui-ui, two endangered fish species. The court decided in favor of the Pyramid Lake Paiute, who see themselves as the keepers of the lake and its inhabitants.

In efforts to address the threat to rich wetland inhabitants, the environmental department began raising frogs from tadpoles found along the reservation since the spring of 2003. The intention is to continue monitoring species, provide education, and reconstruct suitable living and breeding habitats.

The cooperative agreement with the Department of Defense has allowed access to funds for assessing the extent of damages from military operations. The initial mapping project is designed to identify the location of any Navy munitions, enabling the necessary clean-up. The tribe has also begun protesting further burning or detonating bombs and bullets at the Sierra Army Depot.

Comments:

· "These resources are the cultural bridge between the past and future which ensures the cultural continuity of my people today. Once these bridges are destroyed, cultural continuity ends and annihilation begins." --Keith Alan Mandall, Tribal Chairman (Associated Press).

· "The decision has been a long awaited sign of promise for our people and reaffirms our claim of stewardship of the lake. The lake is us and we are the lake."—Keith Alan Mandall, speaking about the court decision to overturn state planned water diversions in the Truckee River.

· "…trying to buy water rights to improve water quality for the benefit of aquatic life." –Dan Mosley, environmental specialist.

Contacts/Sources:

· Dan Mosley, Environmental Specialist, 775-574-0101 x11
· Gerry Emm, Environmental Director
· Anna Keyzers, Environmental Specialist
775-574-0101 x15
PO Box 256
Nixon, NV 89424
· Tribal website, Environmental Department. www.plpt.nsn.us
· Jon Ghahate (Laguna/Zuni Pueblo). "Pyramid Lake Paiute: The Lake is Us and We Are the Lake." www.certredearth.com/Tribal/pyramid.html
· "Pyramid Lake Tribe, others, recognized by EPA for environmental efforts." The Associated Press. April 21, 2000
· "Nevada tribe wants to stop Army burning of munitions in California." The Associated Press. Sept. 14, 2000

Recapturing Arapahoe Language

Northern Arapahoe: Wyoming

Issue:

"In short, Native American languages are becoming an endangered species," a sentiment expressed by James Crawford, a writer who specializes in the politics of languages. This is certainly the case for the Northern Arapahoe of the Wind River Reservation in Wyoming. Only about 1,000 of the 8,000 tribal members are fluent in the Arapahoe language and none are younger than fifty. At the current rate of loss, the Arapahoe language could vanish within 15 years.

Background:

Because of suppression, general apathy, and larger concerns, the desire to maintain the Arapahoe language has slipped away. The days of integration and assimilation are over, but their influences are still felt. Many tribe members attended school when speaking their native language was greeted with punishment, rather than encouragement. The continuing economic struggles that are present throughout many reservations emphasize the seemingly uselessness of the old language in earning a living and navigating the modern world. Contrarily, Nelson White, a council elder, believes that during challenging times, the Arapahoe language and culture becomes even more important. "How are we going to pass along our ceremonies to our young children without the language?" he states. "It's our only way of survival."

Action/Resolution:

This sense of survival is growing – realizing that if the culture and language don't exist into the future, neither does the tribe. Eugene Ridgely, director of the bilingual education program for the Wind River Tribal College in Ethete, Wyoming, is doing everything in his power to grow Arapahoe fluency among the tribe. "First, we've got to get the people to care," Ridgely said. Their first priority will be lobbying parents to take an interest and immersing their children in their native language and customs at home. At the same time, Ridgely will be working to develop the Arapahoe curriculum in schools. By achieving both of these goals, many believe the language can once again flourish. Using a mandate in President Bush's "No Child Left Behind" legislation, the Tribal College will also try to secure federal funding by making Arapahoe a language offering to all students on the reservation under the foreign language requirement.

Contacts/Sources:

· www.northernarapahoe.com "Northern Arapahoe Education and Business Development"
· The Denver Post "Speaking up before a heritage turns silent" by Monte Whaley June 20, 2004
· The Associated Press "Arapahoes seek to revive language" May 19, 2004 Wednesday.

Salish and Kootenai Management of the National Bison Range

Confederated Salish & Kootenai Tribes: Montana

Issue:

The National Bison Range was created in 1908 when 18,500 acres were bought from the Salish and Kootenai Indian land in order to preserve a species that had been almost entirely wiped out. This appropriation was contrary to the Hellgate Treaty of 1855, which established the boundary of the Flathead reservation. Additionally, the bison on the Range are descendants from those preserved by the Confederated Salish and Kootenai people more than 130 years ago. In an effort to regain their cultural position as protectors and stewards of the environment, as well as affirm their tribal sovereignty, the tribe has been petitioning the federal government for rights to manage the National Bison Range since 1994.

Background:

With the passage of the Tribal Self-Governance Act in 1994, Congress granted Tribal governments' authorization to contract various federal activities, especially those that are located within a Tribe's reservation and hold cultural, historic and geographic significance to the Tribe. This power was allotted for the purposes of increasing tribal self-governance and facilitating greater participation in federal programs with Reservations. The Confederated Salish and Kootenai first petitioned for management in the mid 1990s during the Clinton Administration, but no agreement was ever reached. Now, through a tribal campaign entitled "Join the Herd," a final agreement has been decided, but not without opposition.

Opponents are worried that the lands will be closed entirely to the American public and many federal employees will lose their jobs. Some dissenters even question the environmental record of the tribe. However, the Salish and Kootenai people have been recognized as leaders in protecting their environment, being the first Indian nation to designate a tribal wilderness area, as well as working with the wildlife service to reintroduce trumpeter swans and peregrine falcons to the reservation. "The Tribes' tradition of conservation through environmental stewardship is as old as the land and the spirit and intent of the Range and will truly be honored". (www.cskt.org/nr/bison.html)

Action/Resolution:

The Salish and Kootenai have reached a resolution with the federal government and Fish and Wildlife Service, accepting significant management responsibilities for the National Bison Range. This new agreement is to take effect early in 2005. The property itself will remain in federal hands, but the management will be contracted to tribal employees. Responsibilities will include monitoring vegetation, bird banding, waterfowl counts, weed control, wildlife management, fire management, and maintenance and visitor services. In addition, a tribal coordinator will be hired to act as a liaison between the Salish and Kootenai tribes and the federal government. This agreement represents a success for all people involved, one that will bring a traditional way of life back to the native people of the Flathead Reservation and a high quality of stewardship in the management of bison. "Contained in their vision and mission statements is a promise to provide the same quality of life to future generations that is currently enjoyed by the tribe." (Mary Annette Pember, "Salish Kootenai: Control Over Their Land")

Comments:

· "The Tribes' presence on the Bison Range is something everybody will benefit from. We owe this to our ancestors. We respect them by doing this right. But it's really for them and for all of America." -- Fred Matt, Tribal chairman

· "Those bison come from a herd that was from us -- and that story is even told at the bison range visitor center." – Anna Whiting Sorrell, director of tribal support services office.

Contacts/ Sources:

· Confederated Salish & Kootenai Tribes
PO Box 278, Pablo, Montana 59855
Phone: (406) 675-2700 or toll free: (888) 835-8766
Email: csktcouncil@cskt.org
· Natural Resources Department: (406) 883-2888
· Stromnes, John. "Bison Range agreement reached." Missoulian.
· Tribal website www.cskt.org/nr/bison.html
· Sullivan, Jack. "Tribe's negotiating to manage Montana's National Bison Range." The Associate Press. July 3, 2003.
· Pember, Mary Annette (Saginaw Chippewa) "Salish Kootenai: Control Over the Land." CERT website

Sandia Pueblo: Award-Winning Environmental Department

Sandia Pueblo, New Mexico

Issue:

The Pueblo of Sandia spans approximately 23,000 acres in the Middle Rio Grande Valley of central New Mexico. It is in close proximity to two major metropolitan areas: Santa Fe and Albuquerque. The reservation sees the majority of New Mexico's traffic, as Interstate 25 and the Santa Fe Railroad directly bisect the Pueblo as major transportation corridors. Due to its location, the Pueblo faces many environmental pressures; from expanding communities to the north, south, east, and west, hazardous materials spills along I-25, solid waste dumping on tribal lands, leaking underground storage tanks, and poor air and water quality.

Background:

In response to escalating environmental issues, the Pueblo established a community-based environmental department in 1994. The community and Tribal government define the goals and objectives of the department in an effort to reflect cultural ideals and their traditional way of life. An initial environmental survey was conducted, which found that water quality and quantity were the primary concerns of the community, with solid waste issues and air quality being second in importance. In addition, the department recognized the importance of its diverse natural habitats, and has created programs to preserve and restore their myriad environmental ecosystems.

In 1997, the Pueblo was the first tribe to receive the "Partnership for Environmental Excellence Award" from the EPA. In 1999, Sandia Pueblo was one of eight tribes acknowledged with a High Honors Award from the John F. Kennedy School of Government at Harvard University for its "excellence in self-governance on water quality."

Action/Resolution:

Water Quality: The tribe received "treatment as state" status in 1990 from the EPA in determining water quality standards. These standards were then approved in 1993, and are more stringent than the state of New Mexico's.
Air Quality: As the reservation has a disproportionately high rate of asthma among youth, the air program focuses on determining sources of air pollution and protecting community health. The tribe recently hired an air quality technician and is beginning an investigation of on-reservation emission sources.

Solid Waste/ Recycling Program: The Pueblo was the first tribe in New Mexico to discontinue using an open trench dump, switching to a solid waste transfer station. The station includes a drop off for recycling aluminum cans, cardboard, and white paper.

Bosque Restoration Project: The Rio Grande Valley is a wide floodplain primarily used for farming and ranching. While it may appear to be a desolate and uninhabited desert with overgrown brush, it actually sustains an abundant wildlife habitat. The Rio Grande Bosque is a riparian forest with woodlands areas along the river. The tribe received federal funds to rehabilitate roughly 20 acres of Bosque to a more natural state, with the goals of removing invasive non-native plants, encourage planting of native cottonwood and willow, and monitor water quality to better understand water quality issues and their impact on the riparian habitat.
Wetlands Wastewater Treatment Project: The Pueblo established its own wetlands for wastewater treatment in 1996. The wetlands contain more than 5,000 plants and have the capacity to treat up to 30,000 gallons of water per day.
Education: As recent recipients of a $10,000 grant from Harvard University, the Environment Department created the Harvard Water Quality Classroom, located in the Sandia Lakes Recreation Area. This project focuses on community environmental education, giving presentations to students on environmental issues, protection, and career opportunities. In addition, the department offers Student Summer Science Intern Positions, where Pueblo students are employed to gain field experience about the various issues facing the reservation.

Contacts/Sources:

- Executive Director Alex Publisy, 505-867-4533
- Sandia Pueblo website www.sandiapueblo.nsn.us

Southern Ute Academy

Southern Ute Reservation: Colorado

Issue:

The Southern Utes are trying to save their culture and language from extinction, while equipping their children with the education necessary to succeed in today's world. Until recently, these two objectives have been conflicting. Children sent to local public schools in Ignacio, a small La Plata county town in close proximity to the reservation, were losing their traditional heritage while also struggling in school. "The Ute children could keep pace until about grade 4, tests showed, but then they would begin to fall behind. And too few young Utes could speak their own language" (Bertha Box, Southern Ute tribe). The tribe held multiple meetings with the Ignacio public schools, attempting to improve their youth's educational experience, usually to no avail.

Background:

Recognizing the dramatic loss of their culture, tribal elders began forming a vision of a tribal school; a "cultural warehouse for the heritage and a means of unification" (Denver Rocky Mountain News). In the 1990s, when the tribe became abundantly wealthy from the development of their rich endowment of natural gas, their first big civic

project was the construction of this private academy in 2000. Several curriculum models were discussed, but the Montessori approach best suited the way in which Native American children learn. The school has about 100 students enrolled -- from pre-school to sixth grade. And they hope to expand until there is a high school from which Ute children can graduate.

Action/Resolution:

The Southern Ute Academy embodies the 1984 Tribal Council Proclamation "Excellence in Education" and preserving their valuable culture. With a $2 million a year budget funded entirely by the tribe, the Academy strives to reaffirm a cultural heritage and language which has diminished through the decades. Children learn reading, writing, geology, math, and history in conjunction with the Southern Ute language and way of life. Teachers emphasize traditional Ute ideals: respect for parents and teachers, all living beings, and peace. And so far, students are excelling and responding.

The Tribal government also hopes that students will continue with their education, so it funds fully any member who wishes to pursue a degree at an institute of higher learning.

Comments:

· "We don't just pour Ute culture over education here; we pour education into the culture. The culture is the cornerstone." - Ann Peck, lead teacher at the academy

· "The important thing is that tribal students have strong basics so they can excel at higher education." -Pearl Casias, Southern Ute Tribal Vice Chairwoman.

· "The academy is a bid by the 1,350 Southern Utes to reverse a century-long cycle of cultural dilution and federal attempt to extinguish Indian identity." (Denver Rocky Mountain News, Dec. 10, 2000).

· "When you lose your language, you lose yourself." -Whaleah Frost, mother of an Academy student.

· "Physical education and the language program are the cornerstones of the Academy."- Arnold Sanistevan

Contacts/Sources:

· Carol Olguin, Acting Director, 970-563-0100
Arnold Santistevan- head of school
Southern Ute Indian Tribe c/o Southern Ute Academy
PO Box 737 Ignacio, CO 81137
· Southern Ute Home Page www.southern-ute.nsn.us
· Draper, Electra. "Reshaping the Indian landscape: Southern Utes revive culture, cultivate opportunity." The Denver Post. Sept. 19th, 2004. L-7.
· Frazier, Deborah. "Preserving a Culture: Southern Ute Indian Academy dedicated to teaching youngsters tribe's language and ways." Rocky Mountain News. Dec. 10, 2000. 7A.

Taos Blue Lake

Taos Pueblo: New Mexico

Issue:

Identified as the source of their creation, Blue Lake is essential to the identity of the Taos Pueblo people. Respected as a place of significance since the sixteenth century by outsiders, and recognized by the treaty of Guadalupe Hidalgo, Blue Lake remained under control of the Taos people until the early twentieth century. As a growing number of white settlers moved into Northern New Mexico and made their presence felt, the federal government placed Blue Lake and the surrounding water shed under the control of the Forest Service in 1906. First believing this to be a positive outcome that would protect Blue Lake from exploitation and reserve it for their private use, the Taos Pueblo people soon realized that their aboriginal rights had been stripped away and Blue Lake was now part of the public domain.

Background:

In 1924, the Pueblo Lands Board awarded the Taos Pueblo people value-based compensation for Blue Lake and the surrounding area. Although the Taos People agreed to cede any compensation for lands settled by non-Indians in exchange for outright ownership of Blue Lake, the Board would not act. In 1933 the Senate Indian Affairs Committee recommended that title of Blue Lake be restored to the Pueblo people, but in the end, the Pueblo people were only granted Native use rights. Unwavering in their quest to regain Blue Lake, the Taos Pueblo people sustained their campaign. In 1951, it was concluded that Blue Lake was indeed taken unjustly from the tribe and should be returned, but the Indian Claims Commission who made the decision could only offer monetary compensation for the misappropriation. Finally, in 1970, after two more unsuccessful attempts to regain Blue Lake, President Nixon signed House Bill 471 and returned the lake to the tribe.

Action/Resolution:

After 64 years, Blue Lake was returned to its rightful steward. The Blue Lake story would finally be closed after Representative Bill Richardson of New Mexico ushered the Taos Bottleneck Bill through the U.S. Congress in 1997. The bill secured the last 765 acres and access rights to Blue Lake for the Taos Pueblo people. The Lake and the land immediately surrounding it are now completely off-limits to anyone who is not a member of the tribe.

Contacts/Sources:

· Sacred Land Film Project "Taos Blue Lake" www.sacredland.org
· Santa Fe New Mexican "Returning to the Path of Life; Richardson Helps Taos Pueblo Regain Sacred Blue Lake Land" Jan. 5, 1997 Sunday

Creative Occupation

David Swift/CENTER FOR THE ARTS

By F. Patrick Holmes

Patterns

When thinking of the arts and culture of the Rocky Mountain West, images of everything from the landscapes of Albert Bierstadt or Georgia O'Keefe and the photographs of Ansel Adams, to the characteristic black-on-black pottery of Maria Martinez and the musings of Leslie Marmon Silko, quickly surface. One can't help but quote the prophetic sense of place of Wallace Stegner's "geography of hope," and feel resonance with Horace Greeley many years after he penned the phrase "Go West, young man, and grow up with the country." Born from our history and even more so our landscape, our art forms are uniquely diverse and authentic. But while they tend to reflect us at our best, expressing our local connection to place, they often reveal us at our worst, instead perpetuating stereotypes of the American frontier.

A clear and distinguishing faction between a romanticized western culture and an eclectic mountain culture in the Rockies has emerged in the wake of the booming tourist industry. A homogenous, and often frivolous, western folk art designed for large audiences of transient-bobo-skiers blankets the Rocky Mountains West.

From the travels of Buffalo Bill's Wild West show to the contemporary shops of imposter-katchina dolls and peculiarly out of habitat paintings of saguaro cacti, the West has long wrestled with its pervasive art forms. But there may be a new call to reform the unique identity of the arts and culture in the towns and mountain valleys of the Rockies. There may be, in fact, distinct economic advantages to places that harbor new forms of creativity and authenticity.

In his book, *The Rise of the Creative Class and How It's Transforming Work, Leisure, and Everyday Life*, Richard Florida chronicles the emergence of a new socio-economic and demographic group that he claims has become the principal driver of economic productivity, affluence, and ingenuity in contemporary society. Since publication of the best-selling book in 2002, attracting and retaining Florida's creative class, a diverse mix of everything from architects and software designers to musicians, artists, and management consultants, has taken center stage in economic development circles around the nation and world. Florida's assertion that "place is the key economic and social organizing unit of our time" has fueled the now popular notion that economic competitive advantage is a product of a region's ability to attract and retain creative workers.

In a nutshell, Florida's theory of regional economic growth postulates that growth is driven by the location choices of creative people who prefer places that are diverse, tolerant, and open to new ideas. Diversity, in turn, increases the odds that a place will attract different types of creative people with different skill sets and ideas. Places with diverse mixes of creative people are also more likely to generate new combinations, a notion Albert Einstein referred to as "combinatory play," through their interactions with each other. Greater and more diverse concentrations of creative capital, ultimately, lead to higher rates of innovation, business formation, job generation, and economic growth.

According to Florida, gone are the days of luring industry into a region with excessive tax breaks and white-elephant mega projects like new sports stadiums and business parks. Using a more bottom-up approach to economic development, one that harnesses the arts and culture, desirable life-styles, cultural and natural amenities, and most importantly, a tolerance for new ideas and people, will lead to business attraction and growth generation on its own.

But why should we devote all this attention to creative occupation patterns? According to Florida, the creative class makes up only some 30% of the nation's jobs, but disproportionately generates more than half of its earned income. [1] Here in the Rockies, the creative class accounts for over 27% of employment, more than 15 times the amount of employment in forestry, agriculture, and extraction related industries that are commonly thought to dominate economic activity in the region (these industries amount to only about 1.8% of all employment. *See* **Table 1** for a description of how the classes were measured.)

Still, nowhere in the country has the shift from natural resource production and manufacturing to predominantly low-wage service jobs been as pronounced than here in the Rockies. Global market forces, including increased competition from abroad and improved technology requiring less labor and more capital, are likely the reasons that the traditional western mainstays of forestry, agriculture, mining, and oil and gas extraction have been in precipitous decline. Today, an overwhelming 49% of the region works in the service class, which consists of low-skill, low pay, occupations like cleaning, maintenance, and food preparation.

Economic development strategies for the region are no longer based solely upon acting as a low-cost producer of food, timber, and minerals for the nation and world, but are now geared towards trying to diversify the local economic base, be it still traditional, or more contemporarily composed of tourism and the so called "quality of life" industries. Florida's hypothesis holds great potential for a region looking to generate new forms of economic activity. In fact, the "new" competitive advantage of communities in the Rockies may depend upon whether they are able to complement the tourist economy with the creative economy.

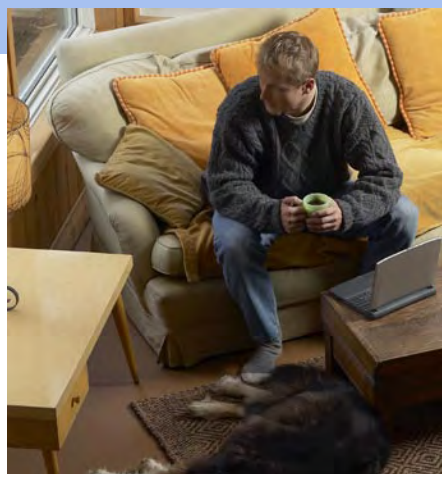
If Florida's theory holds true for the Rocky Mountain region, then areas with high proportions of creative workers should have high concentrations of creative economic outcomes in the form of innovations and industry growth. These areas ought to be experiencing high levels of population and employment growth as well, both sound indicators of regional vitality.

But what drives creativity in this region? As George Sibley notes in his Writer's on the Range editorial for the *Denver Post*, "it wasn't love of fellow man that led people to places where people were few. It was more an attitude of indifference – a willingness to let everyone go to hell in his or her own way with neither help nor hindrance." [2] In the past, it wasn't tolerance that drove migration patterns in the Rockies, it was, as Sibley notes, a "tolerable tolerance."

Have things changed? Are areas that are more open and tolerant experiencing higher levels of economic productivity and increased concentrations of the high-paying creative industries in the Rockies? Do open spaces and the variety of the physical landscape lend themselves to the autonomy, flexibility, and stimuli one needs to be creative? Does biodiversity similarly lend itself to the collision of ideas and experiences in the same way that cultural diversity benefits creativity? It is to these questions and more that we now turn our attention.

What makes for a "creative" place:

- the combination of the built and natural environments, a proper setting for creative lives
- diverse people, interacting and providing cues that anyone can plug into and make a life in that community
- the vibrancy of street life, café cultures, arts, music, and people engaging in outdoor activities – altogether a lot of active, exciting, creative endeavors [3]



Measuring Creativity

Table 1 depicts Richard Florida's occupational clusters for the creative, service, working, and agricultural classes. Data from the 2000 Census, both at the town/city level and the county level was taken to measure employment trends in accordance with these clusters.

In addition, Richard Florida uses a series of statistical indices, which we have also replicated for both town/cities and counties in the Rocky Mountains:

Innovation Index: measures the number of patented innovations per capita. Data for the number of patents was tabulated by inventor city for the period from 1974-2005 from the U.S. Patent and Trademark Office in order to calculate this index.

Gay Index: measures the over or under representation of gay people in a region relative to the Rockies as a whole as calculated from the 2000 Census. Florida refers to gays as the "canaries of the creative economy," arguing that their presence is indicative of a high degree of community tolerance.

Bohemian Index: measures the over or under representation of artistically creative people – authors, designers, musicians, composers, actors, directors, painters, sculptors, printmakers, photographers, dancers, artists, and performers – relative to the Rocky Mountains as a whole. 2000 Census data was also used for this tabulation.

Talent Index: measures the region's share of residents with a bachelor's degree or higher from the 2000 Census.

Melting Pot Index: measures the relative percentage of foreign-born people in a region from the 2000 Census.

Composite Diversity Index: combines the gay, bohemian, and melting pot indices

Evaluating Creative Employment Concentrations in the Metropolitan Rockies

When Richard Florida came to the Colorado College campus in November 2004, the Rockies Project met with him and Rod Frantz of the Creativity Group to discuss their theory as it pertains to the Rocky Mountain Region. Because the Rise of the Creative Class already details the top and bottom creative Metropolitan Statistical Areas in the country, Florida challenged us to seek out what he called the "emerging areas of indigenous culture on the fringe." By indigenous, Florida meant local. Where are concentrations of creative people living within metropolitan areas? Are they in the suburbs or the central city? Where are the concentrations of innovation and tolerant communities?

Table 2 depicts measurements of the creativity indicators for cities within the largest metropolitan statistical areas (MSAs) in the Rockies. Cities are ordered according to their composite creativity score (combines the Creative Class, Composite Diversity Index, Talent Index, and Innovation Index) within the greater metro area.

Of the ten MSAs explored here, only three central cities, Boise, Salt Lake City, and Tucson, are the top creative places in their respective metro-areas when a composite creativity score was calculated from the Diversity Index, Talent Index, Creative Class Index, and Innovation Index. Smaller neighboring areas like Manitou Springs, Boulder, and Incline Village out-compete their respective central cities on the creativity measures. It should be noted that these findings are based upon where people live and not their place of work. The dynamics of commuting have impacts on the creative theory that are in fact pertinent, but are beyond the scope of this discussion.

A quick tabulation reveals clear earnings discrepancies between the top creative areas and the creative losers of each metro-region. On average, household earnings exceed $75,000 for nearly 27% of all households in the top two creative places in each metro area, while only 13% of households experience these remarkably high earnings in the two cities ranking lowest in each metro area.

Table 1. Counting the creative class

Super-Creative Core: primary function is to produce widely transferable new forms
- ·Computer and mathematical occupations
- ·Architecture and engineering occupations
- ·Life, physical, and social science occupations
- ·Education, training, and library occupations
- ·Arts, design, entertainment, and media occupations

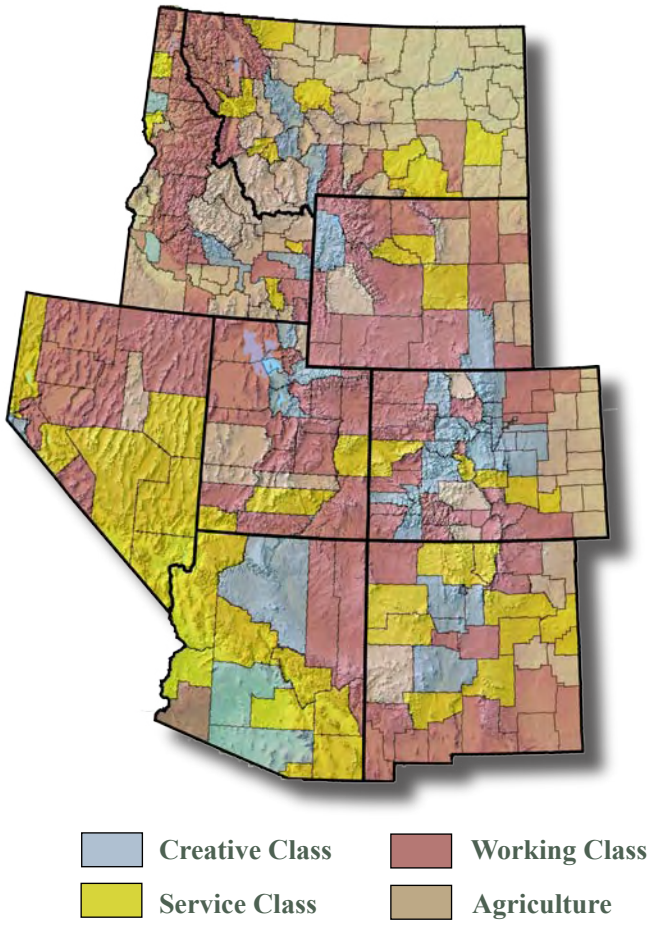
Creative Professionals: apply or combine standard approaches in unique ways to fit the situation
- ·Management occupations
- ·Business and Financial occupations
- ·Legal occupations
- ·Healthcare practitioners and technical occupations
- ·High-end sales and management

Measuring the Working Class:
- ·Construction and extraction occupations
- ·Installation, maintenance, and repair occupations
- ·Production occupations
- ·Transportation and material moving occupations

Measuring the Service Class:
- ·Health care support occupations
- ·Food preparation and food-service related occupations
- ·Building and grounds maintenance and cleaning occs.
- ·Personal care and service occupations
- ·Low-end sales and related occupations
- ·Office and administrative support occupations
- ·Community and social services occupations
- ·Protective service occupations

Figure 1. Employment structure by class

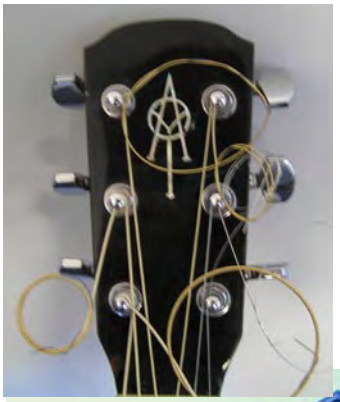
Counties are categorized based upon having greater than the regional average employment in that class with the exception of agriculture areas, which have greater than 10% of their employment in ag. occupations

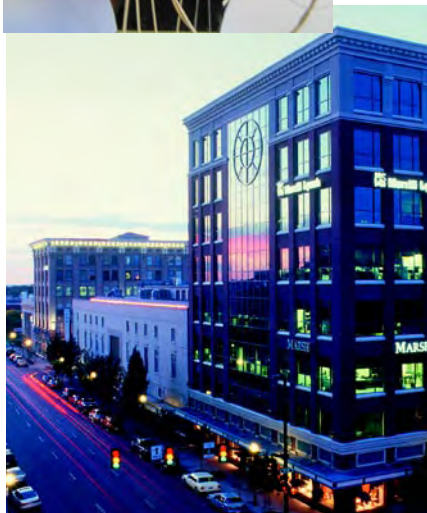


Metropolitan Statistical Area City/Town Name	Total Workers Age 16+	Creative Class	Working Class	Service Class	Ag. Class	Innovation Index	Gay Index	Bohemian Index	Talent Index	Melting Pot Index
Albuquerque MSA										
1. Placitas	1,727	56.1%	13.6%	29.0%	1.3%	33.04	1.95	1.78	44.9%	4.3%
2. Corrales	3,683	54.4%	14.5%	30.5%	0.6%	19.11	0.72	1.68	45.7%	3.0%
3. Los Ranchos de Albuquerque	2,509	50.6%	14.4%	35.0%	0.0%	0.40	2.25	1.51	38.2%	5.5%
4. Albuquerque	215,222	36.9%	16.5%	46.4%	0.1%	8.57	1.23	1.15	29.4%	9.5%
5. Bosque Farms	1689	37.6%	20.1%	41.8%	0.4%	5.03	2.28	0.93	23.7%	2.51%
Boise MSA										
1. Boise City	99,005	37.1%	18.0%	44.4%	0.5%	58.47	0.82	1.13	31.3%	5.2%
2. Meridian	17,458	35.6%	19.3%	44.8%	0.3%	69.91	0.60	0.91	25.8%	3.6%
3. Eagle	5,470	41.0%	13.4%	44.9%	0.7%	71.88	0.00	0.64	36.2%	2.0%
4. Garden City	5,354	30.7%	24.9%	43.9%	0.5%	1.92	1.12	0.67	22.2%	8.2%
5. Nampa	23,154	24.4%	32.0%	42.1%	1.6%	20.78	0.40	0.63	15.1%	9.2%
Colorado Springs MSA										
1. Manitou Springs	2,940	39.8%	19.5%	40.4%	0.3%	12.29	2.23	2.32	42.2%	4.0%
2. Colorado Springs	183,806	36.4%	19.2%	44.2%	0.2%	10.68	0.81	1.10	31.7%	7.6%
3. Gleneagle	2,028	60.6%	5.9%	33.4%	0.0%	0.00	0.00	2.43	55.4%	4.1%
4. Woodmoor	3,425	55.8%	8.7%	35.4%	0.1%	0.00	0.00	1.55	55.7%	4.1%
5. Air Force Academy	4,668	43.1%	4.9%	51.6%	0.4%	0.40	0.61	0.27	38.7%	4.9%
Denver MSA										
1. Boulder	53,828	52.1%	9.3%	38.4%	0.1%	77.15	1.38	2.39	62.7%	11.9%
2. Niwot	2,000	57.4%	5.1%	37.4%	0.2%	69.71	2.81	0.99	54.7%	4.4%
3. Superior	5,160	67.2%	7.8%	25.1%	0.0%	38.41	1.25	1.89	64.1%	14.2%
4. Louisville	10,679	56.7%	8.6%	34.5%	0.2%	74.31	0.83	1.47	56.4%	6.2%
5. Golden	9,197	45.2%	15.3%	39.4%	0.1%	110.73	0.12	1.00	43.8%	7.1%
Las Vegas MSA										
1. Boulder City	6,254	28.6%	23.7%	47.7%	0.0%	11.43	0.73	1.33	20.1%	3.3%
2. Summerlin South	1,979	41.4%	11.4%	47.2%	0.0%	0.00	0.00	2.58	32.1%	16.4%
3. Las Vegas	210,806	24.7%	20.5%	54.7%	0.1%	4.83	1.11	1.09	16.2%	20.5%
4. Henderson	88,076	30.2%	17.9%	51.9%	0.0%	3.17	0.78	1.09	21.9%	8.9%
5. Spring Valley	62,005	26.2%	15.4%	58.4%	0.0%	0.00	0.89	1.38	18.7%	20.2%
Phoenix MSA										
1. Paradise Valley	5,689	66.0%	4.3%	29.1%	0.7%	48.50	0.92	2.20	56.0%	10.1%
2. Cave Creek	1,891	40.3%	14.9%	44.3%	0.6%	58.07	1.33	2.25	36.8%	7.2%
3. Scottsdale	102,824	45.8%	8.3%	45.8%	0.1%	25.36	1.11	1.68	40.3%	10.0%
4. Tempe	89,233	38.1%	16.2%	45.5%	0.1%	26.51	0.75	1.38	37.3%	13.6%
5. Chandler	91,261	39.5%	18.4%	41.6%	0.5%	22.79	0.99	0.92	31.1%	14.2%
Provo-Orem MSA										
1. Alpine	2,633	40.9%	14.2%	44.4%	0.5%	20.20	0.74	1.38	40.3%	3.1%
2. Highland	3,011	48.2%	14.4%	37.2%	0.1%	15.44	0.48	1.02	42.5%	2.1%
3. Provo	51,013	36.4%	16.5%	46.8%	0.2%	7.17	0.48	1.72	34.1%	10.5%
4. Mapleton	2,391	31.6%	26.4%	41.6%	0.5%	13.29	1.97	1.27	25.1%	2.3%
5. Orem	37,687	36.4%	20.2%	43.1%	0.2%	9.43	0.48	1.15	33.7%	9.2%
Reno MSA										
1. Incline Village-Crystal Bay	4,955	38.6%	14.8%	46.3%	0.4%	45.30	0.82	1.47	40.4%	12.6%
2. Verdi-Mogul	1,648	51.3%	12.3%	36.0%	0.4%	8.98	0.00	1.67	37.3%	0.7%
3. Reno	88,851	28.2%	19.5%	52.0%	0.2%	9.29	1.02	1.00	23.0%	18.5%
4. Carson City	23,282	28.7%	23.1%	47.8%	0.4%	9.93	0.59	0.77	16.7%	10.6%
5. Sparks	33,533	23.0%	25.2%	51.8%	0.1%	7.53	0.65	0.75	16.5%	16.8%
Salt Lake MSA										
1. Salt Lake City	90,187	36.6%	19.7%	43.5%	0.2%	29.20	1.65	1.58	31.2%	19.9%
2. Mount Olympus	3,231	58.3%	7.5%	33.9%	0.2%	0.00	1.30	2.40	49.8%	8.7%
3. Fruit Heights	2,284	42.3%	14.1%	43.6%	0.0%	17.50	0.56	1.22	37.1%	1.9%
4. Farmington	5,174	44.1%	15.5%	39.9%	0.6%	19.09	0.00	1.07	38.0%	2.2%
5. Sandy	44,232	36.8%	16.1%	46.9%	0.2%	19.53	0.81	0.86	32.6%	5.6%
Tucson MSA										
1. Tucson	216,314	30.2%	20.5%	49.0%	0.3%	11.10	1.07	1.03	21.4%	15.4%
2. Oro Valley	12,335	50.7%	9.9%	39.2%	0.2%	3.91	0.59	1.00	40.6%	6.5%
3. Catalina Foothills	26,057	58.4%	6.7%	34.7%	0.2%	0.00	1.13	1.62	52.0%	9.4%
4. Green Valley	2,368	31.1%	9.0%	59.4%	0.5%	4.15	0.45	1.70	31.6%	5.6%
5. Tanque Verde	8,101	52.3%	12.6%	34.8%	0.3%	0.00	0.82	1.39	45.2%	5.4%

Table 2.
Creativity within the largest Metro Areas of the Rockies

All figures are expressed as a number or percent except the Innovation Index, measured as patents per thousand people, and the Gay and Bohemian indices, which measure relative concentrations of their respective demographic. For those indices, values higher than 1 indicate greater than the regional average and less than 1 indicate less than the regional average concentrations. Cities within MSAs were ranked based upon a composite score of their Creative Class, Innovation, and Combined Diversity (not shown) indices. Only the top 5 creative cities for each MSA are shown. For more information on how the Rockies Project calculates composite scores, please *see the Methods*





Boise Convention & Visitors Bureau/Tom Volk

Cities looking to reinvigorate their downtown experience have much to learn from neighboring communities that seem to fare better at attracting and retaining a more diverse, creative, and innovative workforce. Moreover, peer cities, like Boise, that fare well on Florida's measure of creativity for the entire metro region as compared to the rest of the nation, and still also retain a strong creative environment relative to the communities in their backyard, may provide excellent examples of effective economic development strategies and investments. Consider this Boise downtown Vision statement:

> "The Downtown Boise Mobility study has a vision for downtown that will retain Boise's position as the foremost urban center for business, government, culture, education and urban living in the region. New land-use policies and real estate developments will continue to keep downtown an attractive and exciting environment with a lively mix of uses–including housing, offices, retail, hotels and convention facilities, public spaces, and cultural, entertainment, research and learning opportunities–where people and businesses thrive." [4]

Boise Convention & Visitors Bureau/George Bernick

Other communities may be able to learn a lot from the efforts to revitalize downtown Boise (pictured above).

Understanding Creativity in the Non-Metropolitan Rockies

Relatively unexplored by the Richard Florida Creativity Group are the implications of their theories for non-metro regions. As George Sibley aptly put it, "Florida's focus is so narrowly metro-urban that he considers Boulder to be sort of 'rural.' But a lot of the restless types Florida describes have been finding their way to the West's small towns for a long time." [5]

Florida does, however, find that his "focus groups and interviews with Creative People reveal that they value active outdoor recreation very highly. They are drawn to places and communities where many outdoor activities are prevalent…" [6]

Still, the changes occurring in the economies of the non-metropolitan Rocky Mountain West may go well beyond a loose connection between recreation amenity values and economic development. Technological advances in the manufacturing industry have limited the demand for raw materials, while other technological advances in communications and transportation have contributed to rural economic vitality in new ways. Fax machines, modems, wireless internet access, efficient delivery carriers like Federal Express and UPS, and increased commuter air travel destinations have all contributed to the ability of small firms and individuals to work where they want to live rather than live where the jobs exist. [7] Access to natural amenities like scenic beauty, recreational and hunting opportunities, clean air, and small communities have been demonstrated by some researchers to take precedence over the typical business and individual location decisions based on low cost of living and job opportunities. [8]

The climate for creativity in the non-metropolitan Rockies is in fact uniquely ripe. In addition to evaluating Florida's creativity measures for all non-metro counties in the Rockies, three new indices of natural diversity and amenity conditions were generated by the Rockies Project to test their association with the creative indices.

The Protected Public Lands Index: measures the percent of a county's land area that is preserved as either Federally designated Wilderness, or managed by the National Park Service.

The Natural Amenity Index: This index was developed by the US Department of Agriculture's Economic Research Service. The index, which ranks all counties in the US on the quality of their natural amenities from 1 (lowest) to 8 (highest), takes into account favorable climate conditions, topographic variation, and high levels of county water area. [9]

The Charismatic Mega-fauna Index: This index uses data from each state's Gap Analysis Program, organized by the Bureau of Land Management, to identify the habitat overlay of three mega-fauna species that are known to occur in all eight of the Rockies States: black bear, elk, and mountain lion. Using a Geographic Information System (GIS) suitable habitat areas were overlayed to find the appropriate "eco-tone" where all three species are predicted to occur.

Table 3 shows the top 25 non-metropolitan counties and their associated creativity measurements. Counties were ranked based upon the combined score of their Creative Class, Composite Diversity, Innovation, and Talent indices.

Rank	County Name, State	Total Workers Age 16+	Creative Class	Working Class	Service Class	Ag. Class	Innovation Index	Bohemian Index	Gay Index	Talent Index	Melting Pot Index
1	Los Alamos County, NM	9,656	62.9%	7.6%	29.4%	0.1%	693	3.85	0.66	58.9%	6.7%
2	Pitkin County, CO	9,832	37.2%	13.7%	46.7%	2.3%	110	1.40	2.25	51.7%	10.9%
3	Latah County, ID	17,223	33.7%	17.4%	45.3%	3.6%	78	2.02	1.57	39.0%	4.3%
4	Albany County, WY	17,168	33.6%	16.1%	47.5%	2.8%	71	1.94	0.15	42.2%	3.8%
5	San Miguel County, CO	4,542	32.8%	20.9%	44.8%	1.6%	24	1.05	1.80	45.6%	7.3%
6	Blaine County, ID	10,846	30.4%	19.6%	46.8%	3.2%	93	1.24	0.61	39.8%	10.6%
7	Gallatin County, MT	37,611	29.8%	22.2%	45.1%	3.0%	120	1.37	0.76	38.6%	2.7%
8	Summit County, CO	16,596	27.6%	19.6%	50.5%	2.4%	49	0.86	1.40	46.2%	11.6%
9	Eagle County, CO	25,729	29.1%	22.3%	47.7%	0.9%	36	0.95	1.08	40.3%	18.2%
10	San Juan County, CO	319	30.1%	31.3%	38.6%	0.0%	0	1.38	1.61	43.7%	2.5%
11	Teton County, WY	11,687	28.2%	20.2%	49.7%	1.9%	53	0.98	1.04	41.2%	5.9%
12	Routt County, CO	12,298	28.4%	23.5%	45.3%	2.8%	52	1.11	0.95	39.9%	4.1%
13	Gunnison County	8,175	27.2%	20.3%	49.8%	2.7%	8	1.15	1.03	41.3%	2.9%
14	La Plata County, CO	22,990	28.5%	19.6%	50.0%	2.0%	24	1.23	1.36	33.8%	2.7%
15	Socorro County, NM	7,127	29.9%	22.8%	42.4%	4.9%	37	1.79	2.13	18.2%	6.4%
16	Douglas County, NV	19,348	28.5%	20.4%	50.0%	1.0%	126	0.93	0.61	21.1%	5.7%
17	Lewis and Clark County, MT	28,651	32.2%	17.1%	48.6%	2.1%	15	1.23	0.57	28.9%	1.6%
18	Jefferson County, MT	4,895	31.2%	19.8%	45.6%	3.5%	0	1.22	1.45	25.4%	1.0%
19	Beaverhead County, MT	4,478	21.9%	21.1%	43.3%	13.6%	139	0.97	0.24	24.8%	1.6%
20	Ouray County, CO	1,818	28.7%	23.6%	43.3%	4.5%	0	1.05	0.55	33.0%	3.2%
21	Wasatch County, UT	6,989	26.7%	26.8%	45.5%	1.0%	28	1.08	0.96	25.0%	4.2%
22	Grand County, CO	7,520	25.5%	25.6%	45.0%	4.0%	0	0.85	1.03	32.8%	3.4%
23	Taos County, NM	13,556	25.8%	20.0%	52.4%	1.8%	23	1.17	0.87	24.5%	4.1%
24	Box Elder County, UT	18,298	22.4%	34.1%	39.1%	4.4%	106	1.13	0.56	18.8%	3.0%
25	Santa Cruz County, AZ	12,875	20.7%	24.6%	52.7%	2.1%	4	0.74	1.77	13.5%	37.7%

Table 3.
The top Non-Metro Creative Counties in the Rockies

All figures are expressed as a number or percent except the Innovation Index, measured as patents per ten-thousand people, and the Gay and Bohemian indices, which measure relative concentrations of their respective demographic. For those indices, values higher than 1 indicate greater than the regional average and less than 1 indicate less than the regional average concentrations. Counties were ranked based upon a composite score of their creative class, innovation, and combined diversity (not shown) indices. For more information on how the Rockies Project calculates composite scores, please *see the Methods Section*.

Los Alamos is at the head of the class, excelling in nearly all of the creativity measurements as a result of the Los Alamos National Laboratory. Following Los Alamos, creative places include Pitkin County, CO, home to Aspen, Latah County, ID, home to the University of Idaho, Albany County, WY, home to Cheyenne and the University of Wyoming, and then a list of generally affluent communities, many of which contain ski-resorts, several of which also contain institutions of higher education.

Are non-metro creative areas experiencing high levels of prosperity in accordance with Florida's theory? Does there seem to be any connection between the quality of the natural environment and creativity?

Simple correlation statistics were used to measure the degree of association between the various creativity indices, indicators of economic condition, and the Rockies Project natural amenity indices. **Table 4** depicts the significant results of these correlation tests. (Note: for more information on correlation statistics please *see the Methods section*.)

Significant associations between our composite creativity measure and job and population growth indicate that a vibrant local economy is associated with creativity. Also noteworthy is a significant correlation between growth in real (adjusted for inflation) earnings per job and creativity. Earnings per job have been in persistent decline throughout the non-metropolitan Rocky Mountain West in response to a number of factors, including the influx of part-time workers, and the decline of natural resource-based jobs. However, this correlation indicates that an association between creativity and rising growth in earnings is significant. Finally, strong associations with the Rockies Project natural amenity indices indicate that healthy natural conditions are associated with flourishing creative economies. More research will have to be done to determine causal relationships, but the strong correlations between the Charismatic Mega-fauna index and all of the major creativity indicators (including the Composite Diversity index at .264 – not shown in Table 4) indicate a particularly noteworthy association between diverse, intact habitat conditions and prospering levels of creativity.

Under One Roof:
Jackson, Wyoming Reinvents its Creative Infrastructure

Dance classes were held in the basements of downtown businesses. Community arts organizations were confined to small nooks of retail space. There existed only one major blockade between artisans and community members collaborating and educating both within and between disciplines to realize new and exciting forms of expression – the affordability of downtown Jackson, Wyoming.

"It was hard to see what was going on collectively with the Arts in Jackson," says Chris Hansen, communications director of the recently completed 41,000 square foot Center For the Arts, a collaborative project between 18 local and regional not-for-profit art organizations, the Town of Jackson, Teton County, and two higher-education institutions, Central Wyoming College and the University of Wyoming. The new facility allows the existing art, performance and musical community of Jackson to flourish through financial security and focal downtown visibility. Sixteen non-profit arts organizations have made a permanent home in the facility, and countless community organizations will make regular use of its studios and rehearsal and meeting spaces.

With the local community character potentially threatened by dispersed development and the evolution of nearby Teton Village into a central node of its own, Jackson has envisioned the Center For the Arts as a catalyst for maintaining the vibrancy and vitality of downtown. The community has unanimously embraced this notion of the "town as the heart of the region," now that the fruition of over ten long years of feasibility studies and planning has made the Center for the Arts a reality.

Bradley J. Boner/ CENTER FOR THE ARTS

Jackson's new Center for the Arts (above and on title page) may be the most exciting model of how to harness a community's creativity anywhere.

Imagine the creative possibilities of even just the third floor of this amazing structure, where a drawing studio, painting studio, photography darkroom and digital arts studio co-exist with an organization catering to constructive extracurricular activities for teens and another organization that helps local Latinos learn English. Groundbreaking on the next phase of the project, the Performing Arts Pavilion, is planned for Summer 2005, and includes a 500-seat theater, a Community Clubhouse, music and theater rehearsal space, and additional administrative offices. New breath has been restored to the non-profit arts community in Jackson. "These organizations finally have a state-of-the-art, financially secure place to grow their programs," says Hansen. Now the creative endeavors of a whole community have a place to grow too, under the same roof.

	Composite Creativity Score	Bohemian Index	Innovation Index	Talent Index
Job Growth from 1970 - 2000	0.388	-	-	0.523
Population Growth from 1970 - 2000	0.311	-	-	0.379
Real Growth in Average Earnings Per Job 1970 - 2000	0.246	-	0.203	-
Protected Public Lands Index	0.335	-	-	0.482
USDA Natural Amenities Index	0.306	-	-	0.322
Charismatic Mega-fauna Index*	0.636	0.546	0.555	0.594

Table 4.
Creativity, Economic Prosperity, and Natural Amenities in the Rockies

Correlation's between Richard Florida's creativity indicators and indicators of economic and natural conditions for the non-metropolitan Rockies.

P = at least .006

dashes indicate that no significant relationship exists between the indicators.

*Note: due to data inconsistencies in measuring the Mega-fauna Index, the correlation was not run for the northern Rockies states of WY, MT, and ID.

Civic Engagement

By Chase Whitney and Matthew Lee-Ashley [1]

and Capacity

2005 State of the Rockies Overall GPA:

Do cowboys bowl alone?

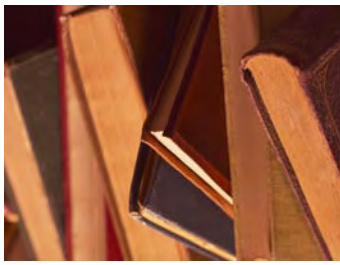
Since the publication of Robert Putnam's Bowling Alone in 2000, there has been no image in American civic life more powerful than that of silent citizens, standing in lanes once jammed with leagues, bowling alone. A seemingly inconsequential statistic showing American participation in bowling leagues in steady decline over the past thirty years has come to symbolize the waning of "social capital" in the United States. In his sweeping evaluation of the American community over the past century, Putnam argues that social networks, public and private institutions, and political participation – those same elements that Alexis de Tocqueville, over a century and a half ago, deemed so essential to American democracy – are eroding. Though Americans once shared the experiences of quilting bees and barn-raisings, and more recently backyard barbecues and precinct caucuses, they now look out at each other over the widening interpersonal gaps of the Information Age, increasingly from "segmented" and sometimes "gated" communities. By a "treacherous rip current… we have been pulled apart from one another and from our communities over the last third of the century," says Putnam. [2]

Many political scientists and policy advisors agree that the apparent ebb of social capital at the end of the twentieth century poses a great danger to our economic livelihood, our communities' health, and our individual well being. It is difficult to imagine, however, that Western cowboys suffer by the "bowling alone" syndrome. (It seems more likely that a cowboy would guard his lane with a pistol than don a polyester bowling team uniform!) When were Westerners, after all, ever reliant on their communities? According to the mythology of the West, isolation and self-reliance are the normal condition of Westerners. Does the breakdown of the American community not just mean more freedom for the individual? By the lone cowboy stereotype of Westerners, at least, the "rip current" that has recently pulled other Americans apart is irrelevant to discussions of the West.

Understanding the Rockies and the role of individualism vs. cooperation played in opening the frontier and taming nature is not simple. The presumption that all Westerners "ride the range" and that it was self-reliant cowboys who "tamed the West," is, of course, deeply flawed. To begin with, in the Mountain West, over 80% of the population now lives in urban areas. Furthermore, most scholars now disagree with Frederick Jackson Turner's famous 1893 argument "that dominant individualism, working for good and for evil, and withal that buoyancy and exuberance which comes with freedom" was essential to the frontier experience. [3] For free marketer and economic historian Terry L. Anderson, individuals who built institutions through cooperation and interdependence were the real heroes of Western history. These institutional entrepreneurs "promoted law and order, efficient use of the natural and human resources, and good resource stewardship." [4] Cooperation – not individualism – "tamed" the West.

Revisionist historians like Patricia Nelson Limerick have taken an even stronger opposition to Turner's depiction of a self-reliant and independent frontier. "It was in the phenomenon of dependence – on the federal government, on the changeability of nature, and on outside investment – that the West pulled ahead." [5] For social and cultural historians, the lens of history should focus not on Turner's heroes, but on the ways in which Western men and women engaged with each other. The union, the family, the tribe, the church, migratory networks, trusts, and partnerships were essential to people who wished to survive and succeed in the West. Where social capital and thus cooperation was abundant, settlers had a better chance of planting and raising a healthy crop, immigrants had a better chance of locating work, Native Americans had a better chance of adjusting to the waves of newcomers, and cowboys and cowgirls had a better chance of finding a market for their cattle. Engagement in society was essential to the Western experience.

Given the importance of social capital to development and prosperity in the West, the question of whether cowboys "bowl alone" is not as preposterous as it may seem. First, we must redefine the stock of social capital in Western communities to fit the region, including the Grange, 4-H Clubs, barn-raisings, and church potlucks. Now if such regional forms of social capital are shrinking as rapidly as elsewhere, there is reason for alarm in the Rockies. When people become more disconnected from one another, says Putnam, their own health and the health of their communities suffer. With the West's rapid population growth and the mobility of its people, the region may be more vulnerable than others to atomization. A disintegration of Western communities into mere collections of individuals would represent a dangerous break from the region's civic traditions.



For the last half-decade, Putnam's thesis on the collapse of social capital has been a hot topic. Social scientists, policy advisors, and public officials have debated how to define "social capital," how to measure it, whether all its forms are equally important, and whether it is even in decline. These discussions have helped spread the language of social capital, and though the term itself is still contested, there is widespread consensus that the participation of citizens in public life – their "civic engagement" – is of great value. Civic engagement, which at one point was mostly used to describe a community's well being, is now a policy objective that politicians, teachers, churches, and non-profits are actively pursuing.

How We Assess Social Capital in the Rockies

Civic engagement is as difficult to measure as it is to define. Because it broadly refers to actions taken toward understanding and promoting the common good, anything from reading the newspaper to running for public office might contribute to a community's level of civic engagement. Gauging how thoroughly a person reads the paper or how serious a campaign for office may be is, of course, extraordinarily difficult. Civic engagement consists of simply too many variable and immeasurable elements for us to gauge it precisely.

The Rockies Project also faces the challenge of locating social capital measures that are applicable in each of the eight states and 280 counties in the region. On the one hand we cannot use national measures of civic capacity and engagement because they are too general, and on the other hand we cannot use club membership roles, public opinion measures, or results of political decisions because there is no consistent data from county to county.

Our solution: divide the concept of "social capital" into two categories. First, we identify measurable elements of "civic capacity." These define the capacity of people and communities in the Rockies to deal with social issues. Second, we choose measurable elements of "civic engagement." These gauge how involved people are in the life of their community.

Both civic capacity and civic engagement are essential to our measurement of social capital. It is not enough, in our view, to have libraries (civic capacity) if few residents read books or use library resources (civic engagement). It is not enough to have large proportions registered to vote (civic capacity) if few turn out for elections (civic engagement). And it is not enough to have a large number of churches (civic capacity) if a low proportion of citizens attend church (civic engagement).

As we attempt to measure social capital in the region, we also face the challenge of gathering data from a vastly diverse region. Though we may not avoid all unfair comparisons, in an attempt to distinguish between small towns and big cities we have divided the counties in the Rockies into categories based on population size. **Table 1** describes how we define metropolitan, micropolitan, and rural counties.

Types of Counties	U.S. Census Size Definition:	Rockies CountiesWith Complete Civic Data	Rockies CountiesWith Missing Civic Data	Total Number of Counties in the Rockies
Metropolitan	containing an urban population of 50,000 +	61	0	61
Micropolitan	non-metro counties with an urban population >2,500	128	10	138
Rural	non-metro counties with an aggregate urban population <2,500	67	14	81
Total		256	24	280

Table 1. Rockies Counties by Size and Data Availability

Data on Civic Capacity and Engagement

On what scales are we measuring social capital in the Rockies? The set of indicators we have located is, admittedly, not as comprehensive as we would like, or as complete as the set used in certain case studies of civic engagement. This initial effort at assessing social capital is, however, based upon an extensive and prolonged search for county-level data. Though county-level data is sparse, and there is room for a more comprehensive, organized and coordinated assessment of how people in the Rockies engage with each other, we hope our analysis reveals broad trends in civic capacity and engagement across the region.

Table 2 lists our indicators and describes how we used them to measure civic capacity and engagement in the Rockies. Below the table are brief descriptions of each of our eight civic indicators.

Indicator	Civic Capacity	Civic Engagement
Charitable Giving	Civic capacity is determined by the number of organizations present per 1000 people, per capita charitable gross assets, and per charity foundation assets. The concentration of charities, and per capita assets demonstrates the operational capacity of charities in each county.	Civic engagement is determined by the percentage of discretionary income given to charity.
Community Health	Civic capacity is determined by the number of physicians and dentists per 100,000 people, whether or not the county has a community health center, and if the county is judged to be a "health profession shortage area."	Civic engagement is determined based upon the assumption that lower behavioral risk factor scores, and a longer life expectancy signifies a higher level of civic engagement.
Education Attainment	Civic capacity is determined by per student expenditure, the growth in education expenditures, and the state's overall commitment to education – presented as a percent of taxable resources spent on education.	Civic engagement is determined by high school graduation rates and higher degree attainment
Library Usage	-	Civic engagement is determined by how much a county utilizes its library. By dividing total visits by the service population, we calculate the number of times the entire service population, or its equivalent, has utilized a county's library assets per year.
Newspaper Concentration	Civic capacity is determined by the rate at which newspapers are published per 100,000 people. A higher concentration of newspapers indicates a higher civic capacity.	-
Political Contributions	-	Civic engagement is determined by the amount per capita given to any candidate or party.
Religious Involvement	Civic capacity is determined by the number of congregations available to county residents per 1000 people.	Civic engagement is determined by the percentage of a county's population measured as religious attendees.
Voter Participation	-	Civic engagement is determined by the percentage of the estimated voter aged population that participated in the 1996, 2000, and 2004 presidential elections.

Table 2.
Measuring Civic Engagement and Capacity

Data Sources

Charitable Giving

Source: The Chronicle of Philanthropy and the National Center for Charitable Statistics of the Urban Institute.

Time Span: 1997 individual contribution data that has been standardized with U.S. Census 2000 cost of living data.

Indicator Data: Number of itemized returns, average discretionary income, average charitable donation, percent of discretionary income given to charity, charities per 1000 people, number of organizations, gross receipts and assets according to form 990, receipts and assets presented as amount per capita.

Values Expressed: The amount of money a person gives to charity is both a function of how much they have to give, and their motivations for giving. Cases of selfish philanthropy do exist, but we must assume that in most cases charity is an action undertaken with the welfare of others in mind. By determining how much people contribute to charity, we seek to identify some of their community values. Is it a community characterized by solidarity and compassion, or one of stoic self-reliance? The charitable giving indicator is able to level the playing field of the "Haves" and the "Have Nots" by determining the percentage of discretionary income that is being donated. We assume that the amount given to charity expresses how individuals view themselves as a part of a larger community, and what that community expects of its members.

Community Health

Source: Community Health Status Reports and Indicator Database – November 2000 - National Association of County and City Health Officials.

Time Span: Presented as a year 2000 report using data collected between 1990 and 2000.

Indicator Data: Statewide rates of sedentary life styles, fruit and vegetable consumption, obesity, high blood pressure, smoking, diabetes, and uninsured persons. County data for number of primary care physicians per 100,000, dentists per 100,000, existence of a community health center, identification of health profession shortage areas, average life expectancy, percentages of teen births, suicides per 100,000, persons 25 and older without a high school diploma, persons 12 and older who have engaged in recent drug use, percent of population in poverty, and demographics of counties with regard to age and race.

Values Expressed: Building upon Robert Putnam's assertion that a healthy community consists of healthy individuals, we have included several indicators of individual health at the county level. Low blood pressure and a lack of diabetes does not mean that you are a meaningful contributor to civic life, but we assume that a community that values social interaction and the support of the common good will not be found in front of the television for eight hours a day.

Education Attainment

Source: U.S. Census Bureau and "Quality Counts 2000," the fourth annual 50-state report by Education Week

Time Span: The year 2000 with data also collected in 1997,1998, and 1999.

Indicator Data: Percent of the population 25 years and older who have a high school diploma, percent 25 years and older who have a Bachelor's degree or more, education spending per student adjusted for regional costs, percent change in inflation-adjusted education spending per student 1998-99, and percent of total taxable resources spent on education 1997.

Values Expressed: Education is perhaps the most important measure of social capital. Not only does Putnam cite education as the single most reliable predictor of future civic engagement, it is also a useful predictor of individual success. Communities that value education and make it a priority to see their young people graduate from high school and attend college are communities that place great stock in the future. Although we have ranked each indicator of civic engagement equally, education attainment is probably the most important.

Newspaper Concentration

Source: U.S. Census Bureau – County Business Patterns

Time Span: The year 2002.

Indicator Data: Number of newspapers per county, 2002 county population standardized, units of 100,000 persons per county, and newspapers per 100,000 people.

Values Expressed: In the age of media consolidation, we assume that the existence of a locally published newspaper contributes to a sense of identity and shared priorities that are important for a civically engaged community. A newspaper informs the populace on local events and issues, something that is crucial in creating community awareness.

Religious Involvement

Source: Religious Congregations & Membership in the United States 2000. Glenmary Research Center - Nashville, TN

Time Span: The year 2000.

Indicator Data: Number of congregations, members, adherents, and attendees. County population, adherents as percent of county population, attendees as percent of county population, and number of congregations per 1000 people.

Values Expressed: As was evident in the 2004 presidential campaign, religious affiliation is a platform for promoting political involvement. Though religion may not always determine the outcome of elections, we see religious involvement as a key identifier of civic capital. It provides a weekly venue not only for private worship but also for social exchange, discussion, and action. Ranging from food drives to political lobbying, religion is a powerful social catalyst.

Library Usage

Source: National Center for Education Statistics

Time Span: The year 2002.

Indicator Data: Number of libraries per county, total unduplicated service population for each county, number of library visits, and number of time the unduplicated service population in total visited their libraries.

Values Expressed: Seen by Andrew Carnegie as the great equalizer, the library is an asset that each community has at its disposal. But does the community actually use it? We have attempted to answer this question by determining how many visits libraries in a county receive and what proportion of the population is reflected in that number of visits. Those who use the library are more likely to be informed about the world around them. Though the rise of the Internet has made the traditional book-borrowing visit to the library more infrequent, the library is a point of access to the internet for people across the country and across socio-economic boundaries. In a sign that libraries increasingly are becoming community learning centers, the Denver Public Library spent nearly one quarter of its 2004 materials budget on electronic media! Today, libraries conduct classes on information technology, lend electronic media, and help community members remain computer-literate as the information revolution charges on.

Political Contributions

Source: Federal Election Commission – www.opensecrets.org

Time Span: 2004 Presidential Election.

Indicator Data: Total political party contributions, per party contributions, amount given presented as a per capita figure.

Values Expressed: Although the political contribution data available is not necessarily local in scope, it shows how engaged a community is in a political contest. It is difficult to apply this indicator as broadly and as effectively as we would like. It is very apparent that more affluent counties are giving more to political parties and candidates, but we have chosen to retain this indicator to show which counties declared their position and views with more than a vote.

Voter Participation

Source: Office of the Secretary of State – Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming

Time Span: Presidential/General Elections for 1996, 2000, and 2004

Indicator Data: Total votes cast, number of registered voters, estimated voter age population, and percentage turnout for both registered voters and voter aged population.

Values Expressed: The bedrock of civic engagement in our democracy is voting. From school board elections to presidential elections, voting is our basic social duty. The fact that almost a majority of our country chooses not to participate in elections is the most frequently cited example of our increasing social apathy and decay. By comparing the voter aged population turnout in the last three presidential elections, we measure those counties that have bucked the national trend and have remained committed to election participation.

Grading The Rockies on Civic Capacity, Civic Engagement and Social Capital

We have used available data to evaluate the concept of "social capital" throughout the 8-state Rockies Region. Those counties with missing data have been assigned a grade of "incomplete." Counties with complete data have been divided into groups according to population: metropolitan, micropolitan, and rural.

A. Civic Capacity

We believe that a necessary but not sufficient condition for a county to be judged healthy is if its citizens possess the civic capacity to work together and to relate in a variety of social contexts. To determine civic capacity, we added scores for:

- Charity Capacity
- Community Health Capacity
- Education Capacity
- Newspaper Publishing Capacity
- Religious Capacity

B. Civic Engagement

Civic engagement requires the existence of civic capacity, but it also requires the willingness of residents to use that capacity. The civic engagement score measures how effectively counties use their civic resources, regardless of how many are available
Civic Engagement was determined by adding scores for:

- Charity Engagement
- Community Health Engagement
- Education Engagement
- Library Engagement
- Political Contribution Engagement
- Religious Engagement
- Voting Engagement

C. Social Capital

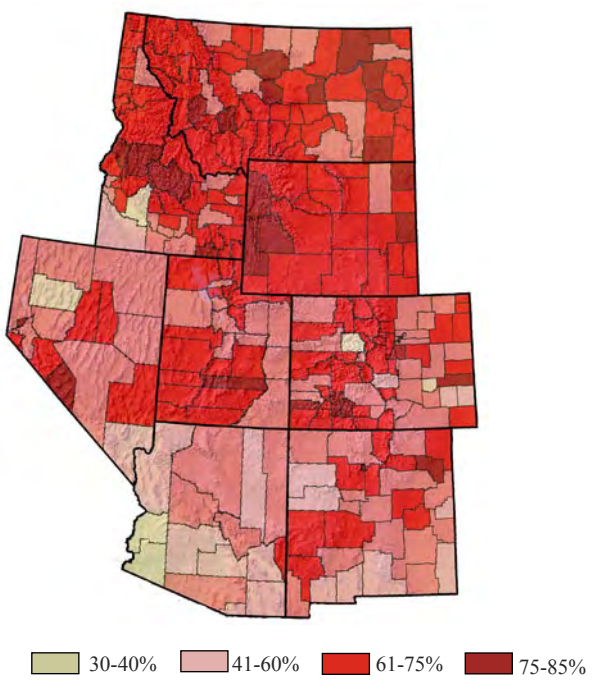
Finally, those counties that have high civic capacity and civic engagement earn our highest grades in the area of social capital. These are the counties that serve as examples for others of how engage residents, promote community, and build social capital.

Social capital was determined by combining scores for:

- Combined Civic Capacity Score
- Combined Civic Engagement Score

For more information on how the Rockies Project calculates composite scores, please refer to the Methods section.

2004 Voter Aged Population Turnout



Top Metropolitan Areas for Civic Capacity

Area Name	Charities per 1000 people 2000	Prim Care Phys Rate per 100,000 1997	Education Spending per Student, Adjusted for Regional Cost Differences (1998)	Newspapers per 100 Thousand Persons 2002	Number of Religious Congregations per 1000 People	Combined Z Score for Capacity	Capacity Grade
Denver, Colorado	4.5	209.8	$5,599	5.6	0.6	1.28	A
Yellowstone, Montana	3.9	82.7	$6,349	5.3	1.1	0.78	A
Missoula, Montana	4.9	84.4	$6,349	3.1	0.9	0.75	A
Ada, Idaho	2.7	88.3	$5,029	2.5	0.9	0.71	A
Santa Fe, New Mexico	5.1	102.6	$5,339	0.7	0.7	0.66	A
Carbon, Montana	3.8	53	$6,349	10.3	2.8	0.55	A-
Cascade, Montana	3.5	65.7	$6,349	1.3	1.1	0.55	A-
Washoe, Nevada	2.4	92.9	$5,478	2.5	0.4	0.49	A-
Boulder, Colorado	3.5	115.1	$5,599	4.7	0.7	0.40	A-
Bernalillo, New Mexico	2.9	138.4	$5,339	2.6	0.6	0.37	A-
Metropolitan Mean	2.3	65.509	$5,148	3.9	1.2		
Metropolitan Median	2.2	61.8	$5,339	2.5	1		

Top Metropolitan Areas for Civic Engagement

Area Name	Discretionary Income to Charity	2004 Voter Aged Population Turn Out	Percent 25 and older with a High School Diploma 2000	Library Visits Divided by Unduplicated Service Population 2002	Amount Given to Political Parties or Candidates per Capita 2004	Religious Attendees as a Percent of County Population	Combined Z Score for Engagement	Engagement Grade
Douglas, Colorado	5.6%	76%	97.0%	10.1	$7.30	5.4%	1.50	A
Boulder, Colorado	5.9%	73%	92.8%	9.1	$14.29	8.9%	1.49	A
Summit, Utah	7.8%	65%	92.5%	5.4	$10.58	5.0%	1.06	A
Larimer, Colorado	5.8%	70%	92.3%	7.3	$3.89	11.4%	0.98	A
Morgan, Utah	19.4%	68%	92.6%	5.4	$0.43	0.3%	0.94	A
Davis, Utah	20.0%	66%	92.2%	3.4	$1.40	1.3%	0.68	A-
Cache, Utah	20.0%	61%	90.4%	4.3	$0.91	1.1%	0.66	A-
Jefferson, Colorado	5.8%	67%	91.8%	4.2	$6.90	8.5%	0.62	A-
Arapahoe, Colorado	7.2%	60%	90.7%	5.9	$11.73	8.9%	0.61	A-
Clear Creek, Colorado	3.7%	71%	93.4%	4.6	$0.64	2.1%	0.57	A-
Metropolitan Mean	8.80%	61%	85.30%	4.7	$3.70	5.30%		
Metropolitan Median	6.80%	62%	86.30%	4.3	$2.51	5.10%		

Top Micropolitan Areas for Civic Capacity

Area Name	Charities per 1000 people - 2000	Prim Care Phys Rate per 100,000 - 1997	Education Spending per Student, Adjusted for Regional Cost Differences (1998)	Newspapers per 100 thousand Persons 2002	Number of Religious Congregations per 1000 people	Combined Z Score for Capacity	Capacity Grade
Teton, Wyoming	6.4	187	$6,790	10.8	0.8	1.291	A
Lewis and Clark, Montana	5.8	111	$6,349	3.5	1.1	1.288	A
Valley, Montana	5.3	60	$6,349	27.0	4.0	0.845	A
Toole, Montana	4.0	62	$6,349	36.9	3.8	0.825	A
Sheridan, Wyoming	5.6	103	$6,790	3.7	1.2	0.769	A
Pondera, Montana	5.6	62	$6,349	32.0	3.1	0.662	A
Custer, Montana	4.7	107	$6,349	17.5	1.7	0.652	A
Blaine, Idaho	4.6	134	$5,029	9.8	0.8	0.609	A
Richland, Montana	3.6	69	$6,349	21.6	2.9	0.551	A
Hot Springs, Wyoming	7.0	107	$6,790	21.2	2.7	0.545	A
Micropolitan Mean	3.0	63	$5,501	9.3	1.9		
Micropolitan Median	2.8	60	$5,409	6.7	1.9		

Top Micropolitan Areas for Civic Engagement

Area Name	Discretionary Income to Charity	2004 Voter Aged Population Turn Out	Percent 25 and older with a High School Diploma 2000	Library Visits Divided by Unduplicated Service Population 2002	Amount Given to Political Parties or Candidates per Capita 2004	Religious Attendees as percent of County Population	Combined Z Score for Engagement	Engagement Grade
Teton, Wyoming	15.1%	76%	94.7%	15.8	$113.71	4.7%	2.905	A
Los Alamos, New Mexico	7.0%	81%	96.3%	13.2	$10.61	14.3%	1.629	A
Johnson, Wyoming	8.6%	70%	90.1%	13.3	$4.89	10.9%	1.104	A
Chaffee, Colorado	7.7%	63%	88.5%	11.2	$1.65	12.4%	1.015	A
Gallatin, Montana	7.9%	70%	93.3%	6.6	$5.40	10.4%	1.000	A
Millard, Utah	24.3%	63%	86.7%	6.7	$0.29	2.1%	0.996	A
Kane, Utah	10.9%	70%	86.4%	6.2	$1.87	5.0%	0.920	A
Park, Wyoming	7.5%	73%	87.6%	6.4	$7.36	9.5%	0.905	A
Washakie, Wyoming	10.3%	72%	85.6%	7.0	$2.33	11.8%	0.825	A
Platte, Wyoming	7.1%	71%	84.9%	9.8	$3.45	9.1%	0.822	A
Micropolitan Mean	8.8%	60%	81.2%	5.3	$3.35	6.7%		
Micropolitan Median	7.5%	61%	81.2%	4.8	$1.48	6.4%		

Top Rural Areas for Civic Capacity

Area Name	Charities per 1000 people 2000	Prim Care Phys Rate per 100,000 1997	Education spending per student, adjusted for regional cost differences (1998)	Newspapers per 100 thousand persons 2002	Number of Religious Congregations per 1000 people	Combined Z Score for Capacity	Capacity Grade
Hinsdale, Colorado	12.7	143.3	$5,599	128.7	5.1	1.313	A
Liberty, Montana	7.9	125.5	$6,349	49.3	5.1	0.950	A
Meagher, Montana	6.2	166.2	$6,349	51.7	4.1	0.847	A
Daniels, Montana	6.4	97.2	$6,349	51.3	5.5	0.647	A
Sheridan, Montana	5.4	69.1	$6,349	26.3	6.1	0.646	A
Custer, Idaho	4.1	47.1	$5,029	24.0	2.3	0.628	A-
Wheatland, Montana	2.7	85.7	$6,349	46.3	5.8	0.534	A-
Sedgwick, Colorado	4.7	38.4	$5,599	37.0	4.0	0.480	A-
Wibaux, Montana	5.6	0.0	$6,349	100.5	5.6	0.424	A-
Valley, Idaho	7.2	86.4	$5,029	26.3	2.1	0.400	A-
Rural Mean	4.4	40.6	$5,743	24.3	3.6		
Rural Median	4.1	37.7	$5,599	22.4	3.2		

Top Rural Areas for Civic Engagement

Area Name	Discretionary Income to Charity	2004 Voter Aged Population Turn Out	Percent 25 and older with a High School Diploma 2000	Library Visits Divided by Unduplicated Service Population 2002	Amount Given to Political Parties or Candidates per capita 2004	Religious Attendees as percent of County Population	Combined Z Score for Engagement	Engagement Grade
Hinsdale, Colorado	17.5%	78%	93.1%	9.3	$0.65	33.7%	1.976	A
San Juan, Colorado	6.4%	75%	92.1%	48.7	$4.13	5.7%	1.726	A
Rich, Utah	21.5%	63%	91.5%	3.8	$10.13	0.0%	1.684	A
Wayne, Utah	15.2%	76%	88.5%	5.8	$3.03	0.8%	1.071	A
Kiowa, Colorado	11.8%	76%	86.3%	7.0	$0.78	12.3%	0.927	A
Garfield, Utah	19.2%	70%	85.8%	6.2	$1.29	0.0%	0.908	A-
Sublette, Wyoming	4.1%	76%	89.0%	16.6	$9.38	7.1%	0.899	A-
Grand, Colorado	5.4%	66%	92.3%	7.2	$3.40	5.2%	0.870	A-
Cheyenne, Colorado	5.3%	67%	84.1%	4.8	$9.04	9.7%	0.788	A-
Custer, Colorado	4.9%	73%	90.3%	12.4	$0.96	6.8%	0.743	A-
Rural Mean	8.4%	70%	83.0%	5.9	$2.32	8.5%		
Rural Median	6.9%	72%	83.4%	4.3	$1.35	7.1%		

Profiling Social Capital

After all the calculations and grades, we wanted to make sure that what the numbers told us matched with the reality on the ground. If our study did reflect the vibrancy of civic engagement and capacity in the Rocky Mountain West, we suspected that citizens could easily tell us the kinds of things their communities are doing to promote and sustain civic life.

So, in each of our three sub-categories - Metropolitan, Micropolitan, and Rural - we made a few phone calls to the top rated county and asked those in the "know" what was going on in their towns and counties that would explain their high grade for Civic Capacity and Engagement. We asked about contributions to civic life, necessary characteristics for civic vibrancy, community challenges, civic initiatives, and civic perceptions. For our interviewees, we attempted to contact a county Commissioner, Chamber of Commerce representative, and a nonprofit representative in each county to get their personal perspectives on civic life in their communities.

Top Metropolitan Areas for Overall Social Capital

Area Name	Composite Grade
Boulder, Colorado [08013]	A
Denver, Colorado [08031]	A
Missoula, Montana [30063]	A
Carbon, Montana [30009]	A
Ada, Idaho [16001]	A
Summit, Utah [49043]	A-
Douglas, Colorado [08035]	A-
Yellowstone, Montana [30111]	A-
Larimer, Colorado [08069]	A-
Santa Fe, New Mexico [35049]	A-

NOAA Boulder, CO

Boulder County, CO

After speaking with Ms. Susan Morris Graf, President and CEO of the Boulder County Chamber of Commerce and Mr. Pat Monacelli, a representative from Foothills United Way, the reality of Boulder County does seem to reflect the results of our study.

Contributors to Civic Life
When asked if there are any organizations that directly contribute to civic engagement in Boulder County, both Ms. Graf and Mr. Monacelli gave examples of ways the local government and organizations are supporting the development of civic life. One example is the "College for Political Knowledge," a seminar sponsored by the local government that introduces would-be politicians to campaign strategies and the basics of running for office. Ms. Graf explains it as a way to help people transition from "involved citizen to community office-holder and decision maker," or from yelling to being yelled at.

Necessary Civic Characteristics
We also asked our respondents what characteristics they thought were necessary for a community to be civically engaged. Ms. Graf immediately identified education as the most important attribute in creating an engaged community. "A more educated populace is employed at a higher level, makes more money, and has more time to commit to the community." She also identified the size of the community as an important factor in nurturing engagement. For an example of how citizens are getting involved, Mr. Monacelli presented the success of "Day of Caring," a day each year dedicated to volunteerism in which hundreds of people from Boulder County contribute a day to local nonprofits and community initiatives. As another example of citizen involvement Ms. Graf explained the process of citizen input sessions that take place anytime a major project or change is initiated in the city of Boulder. Although these sessions are often acrimonious, they are very effective in allowing community input and achieving a widely accepted outcome.

Community Challenges
All communities are faced with ongoing challenges and we wanted to know what the most urgent challenge facing Boulder County is and what the citizens are doing to address it. Both Ms. Graf and Mr. Monacelli identified the economy as an issue of particular importance. As the region grows and the economic realities begin to shift, the residents of Boulder County will have to take a proactive roll in determining what their economy will look like in the next decade and beyond. The degree to which citizens are participating in this discussion is commendable. The County has created an Economic Vitalization and Citizens Board that will create a strategic economic plan for the next several years.

Civic Initiatives
When asked about exciting community initiatives, our interviewees were not short of examples. Ms. Graf was very enthusiastic about a new international film festival occurring in Boulder this month. Their hope is to create a festival on par with more notorious film festivals around the country and the world. Mr. Monacelli gave examples of new youth initiatives being undertaken in Boulder County, as well as the roll out of the new "211" service that connects service providers with citizens in an efficient and easy manner. Other examples of community initiatives are a study looking at the feasibility of locating a large conference center in Boulder, and a new business incubation institute that would partner with local businesses, organizations, and the University of Colorado to develop new and innovative business in Boulder and Colorado.

Civic Perceptions
Statistics are not always representative of reality, so just to make sure we weren't completely off base in ranking Boulder County as one of the most civically engaged and endowed counties in the West, we asked our respondents how they would grade it. On a scale from one to five, five being the most civically healthy, where does Boulder County land? Ms. Graf and Mr. Monacelli gave Boulder County a score of five and a four respectively.

As Ms. Graf pointed out, a civically engaged community is a double-edged sword. "When everyone wants to have his or her say on an issue, it can take along time to get anything done."

Top Rural Areas for Overall Social Capital

Area Name	Composite Grade
Hinsdale, Colorado [08053]	A
San Juan, Colorado [08111]	A
Rich, Utah [49033]	A
Meagher, Montana [30059]	A
Wayne, Utah [49055]	A
Sublette, Wyoming [56035]	A-
Sedgwick, Colorado [08115]	A-
Grand, Colorado [08049]	A-
Liberty, Montana [30051]	A-
Kiowa, Colorado [08061]	A-

Teton County, WY

Does a high level of Social Capital characterize Teton County? According to our study it does, but to make sure, we again asked a few people who actually live there to find out.

In our discussions we talked with a representative from the County Commissioners Office, a representative from the Teton County Chamber of Commerce, and Susan Eriksen-Mier, a Program Officer for the Jackson Community Foundation. The representative from the County Commissioners Office, who did not want to be mentioned by name in the report, best expresses their collective opinion by saying "this is not an uninvolved community by any sense of the word."

Contributors to Civic Life
According to our respondents, there is not a shortage of programs and organizations in Teton County that contribute to civic involvement. The Parks and Recreation Department, community counseling, the public library, and the tremendous focus on education all contribute to the high level of civic involvement that they see in Teton County. The citizens of Teton County are also very willing to push for what they want. According to Ms. Eriksen-Mier, the level of involvement is not necessarily any indication of the level of cooperation or solidarity. "Teton has lots of sophisticated residents who care, but do not necessarily work together." She goes on to cite the tendency of interest groups to combat ideas brought-forth by elected officials rather than to look for compromise. The cycle has a tendency of creating high turnover in elected offices and a social tug-of-war.

Necessary Civic Characteristics
We asked our respondents what characteristics are necessary for a community to have if they want to be engaged, and they unanimously said communication. Again, the representative from the County Commissioner's Office cited the number of citizens who attend County Commission meetings. In a recent meeting to discuss a new development in the region, the Commission was forced to rent two extra rooms to accommodate the influx of attendees. This attendance is certainly a positive attribute of Teton County, and the local government does all it can do to encourage it. Through a campaign of advertisements and public service announcements, meeting times and subjects are disseminated throughout the county.

Also, a motivation for civic involvement that was cited by our respondents was a sense of community pride. The representative from the County Commissioner Office said, "If people have pride in where they live, they will take an active role in determining its future."

Hinsdale County, CO

We have to admit that finding someone to talk to in Hinsdale County presented a bit of a challenge. Luckily, in the county of about 750 people, we found Ray Blaum, the Hinsdale County Administrator. As we continued to seek affirmation of what our study tells us about Civic Capital in the Rocky Mountain West, we asked Ray the same questions we asked our other respondents from Boulder and Teton Counties.

Contributors to Civic Life
According to Mr. Blaum, Hinsdale County's size has seemingly little to do with the Civic Capacity it has to share with its residents. The number of organizations and initiatives that are available to citizens is admirable. Mr. Blaum cited the Arts Council, a Public Health and Community Service organization, Lake Fork Community Foundation, Nickel's Foundation, and a recently completed youth facility that all exist in Hinsdale County to promote a cohesive community.

Necessary Civic Characteristics
When asked how such a small county can have so much to offer its residents, Mr. Blaum said that Hinsdale County is "full of people who are here because they want to be, not because they have to be. It has been my experience that people want to work together to make the place they live better". Public meetings are always well attended said Blaum. Meetings ranging from wilderness to education, residents are always willing to attend and lend their help, opinions, and expertise when needed. Hinsdale County is also well endowed with a natural setting. The advantages to communities that attract people solely based upon their location are immense. The annual Wine and Music Festival and 50 mile run (not in conjunction) that Hinsdale County hosts are unique events for a county of 750 people.

Top Micropolitan Areas for Overall Social Capital

Area Name	Composite Grade
Teton, Wyoming	A
Los Alamos, New Mexico	A
Lewis and Clark, Montana	A
Johnson, Wyoming	A
Sheridan, Wyoming	A
Valley, Montana	A
Gallatin, Montana	A
Park, Wyoming	A
Hot Springs, Wyoming	A
Blaine, Idaho	A

Community Challenges
For a county that is associated with the Grand Tetons and a spectacular natural setting, it isn't difficult to see why so many residents are prideful. It also isn't difficult to see why development and the preservation of that natural setting is almost always the most divisive issue citizens of Teton County confront. Growth and its management were unanimously cited as the most pressing challenge facing the county. When asked how citizens were addressing this challenge, respondents said venues for voicing concern and opinion are not in short supply, such as planning meetings and organizational initiatives.

Civic Initiatives
To determine the physical future of Teton County, the local government is strenuously trying to gather public opinion and buy-in with regard to the growth plan of the county.

Civic Perceptions
So how do our respondents rate Teton County on a scale from one to five? The answer is about 4 ½. They all agree that Teton County is very much civically endowed and engaged.

Mr. Blaum, after years of observation, sees that the people who get involved with the community have a tendency to stay. Hinsdale County also benefits from a welcoming atmosphere. Due to the work of a local trails commission, there is an extensive network of trails that lay throughout Lake City and all of Hinsdale County. According to Mr. Blaum "when you enter a town where everyone is walking, you don't feel out of place, threatened, or in a hurry – you end up wanting to stay."

Community Challenges
Although it sounds practically ideal, Hinsdale does have its challenges. As Mr. Blaum puts it, the challenge is "always money." 96% of Hinsdale County is publicly owned land, 45% of which is designated wilderness. With only 4% of the county's land subject to property tax, Hinsdale is uniquely dependent on the Federal policy of Payment in Lieu of Taxes. Hinsdale County receives approximately $.08 per acre of Federal land in the county. Another challenge Hinsdale contends with is that 75% of its housing stock is considered seasonal. For a good part of the year, Hinsdale is a cold-bed community.

Civic Initiatives
Despite the seasonality of a large part of its population, Hinsdale does make education and youth programs a year-round priority. Hinsdale recently passed the first ever bond issue for the local school district, allowing the district to offer K through 12 education to its residents. Also taking a proactive stance towards the future, Hinsdale is completing a comprehensive plan that will direct its development in the next decade.

Civic Perceptions
And for the final score, Mr. Blaum not believing any county really deserves a five, gives Hinsdale a solid four.

Relationships with Social Capital

As an overview, correlations do not indicate causation. Correlations are used to describe the observed relationship between two different events. A positive correlation shows that as one event increases, the other increases as well. A negative correlation shows that as one event increases, the other decreases in an inverse relationship. Because two events show a negative or positive correlation, it does not mean one caused the other, or that they necessarily had anything to do with each other. Correlations deal only with observed events, and any further conclusions cannot be inferred with correlations alone.

After the results of the Civic Capacity and Engagement data were generated, we calculated a number of correlations in an attempt to discover any relationships that might exist between our results and independent indicators available at the county level. We chose a wide variety of independent indicators to compare with our data, everything from crime statistics to the percentage of a county's population that once lived in the Northeastern United States. After calculating these many correlations we sifted through the data for strong positive or negative correlations, anything near or above .40 for a positive correlation and near or below -.40 for a negative correlation. Again, the correlations we found do not indicate causation, but we believed they would pose important questions about the creation and maintenance of social capital at the county level. **Table 3** indicates the most apparent relationships that exist in the data for Civic Capacity, Civic Engagement, and the combined score of Capacity Plus Engagement.

Education Attainment:

The correlation between a county's civic health and its population's education attainment level is the strongest correlation observed. It exists at a significant level for Civic Engagement and an even more significant level for the combined score of Civic Capacity Plus Engagement. This correlation stands to reason that a well-educated populace is one that usually earns more money, has more time to devote to community issues, and is better equipped to confront policy issues.

Income:

To explore the assumption that a county's wealth would determine its level of Civic Capacity and Engagement, we calculated the correlation between per capita income of each county and their respective scores from our study. We found a significant correlation does exist between a higher per capita income and civic engagement for both Metropolitan and Micropolitan counties.

We also wanted to examine the possible correlation between a population with a balanced income distribution, and civic health. We defined a balanced income distribution by the ratio of persons making more than $70,000 to those making less than $20,000. The results for this correlation provided some interesting results. A significant positive correlation was present between balanced income distribution and Civic Engagement in Metropolitan Counties. The same correlation was not significant in Micropolitan Counties, and was significant, but negatively correlated in Rural Counties. These results show a relationship between an economically diverse population and its Civic Engagement in Metropolitan Counties, and relationship between an economic homogeneous population and Civic Engagement in Rural Counties.

Working and Living in the Same County:

A rather significant correlation does exist between the percentage of a county's population this lives and works in the same county and that county's Civic Engagement Score.

So What?

Our hope is to spark discussion and ask thoughtful questions that might help communities find ways to improve their civic life. From our study we have certainly learned that civic capital is complicated and impacted by countless factors. Hopefully, by providing a few correlations from our study, we can give you a place to start when considering the priorities of your own community.

Table 3. ▶ Correlations between Social Capital and County Independent Variables

Civic Engagement	Metropolitan	Micropolitan	Rural
Education Attainment	0.767	0.654	0.596
Per Capita Income	0.415	0.506	0.256
Balanced Income Distribution	0.417	0.18	-0.383

Civic Capacity	Metropolitan	Micropolitan	Rural
Family Homes	-0.527	-0.386	-
Work and Live in the Same County	0.543	0.342	.310/.011

Capacity + Engagement	Metropolitan	Micropolitan	Rural
Education Attainment	0.73	0.704	0.672

p = at least .04, dashes indicate no significant relationship

Civic Capacity and Engagement Grades and Data Appendix

Area Name	Metro, Micro, Rural	Excluded County	Discretionary Income to Charity	Charities per 1000 people 2000	2004 Voter Aged Population Turn Out	Prim Care Phys Rate per 100,000 1997	Percent 25 and older with a High School Diploma 2000	Education spending per student, adjusted for regional cost differences (1998)	Visits Divided by Unduplicated Population 2002	Newspapers per 100 thousand persons 2002	Amount Given to Political Parties or Candidates per capita 2004	Religious Attendees as percent of County Population	Number of Congregations per 1000 people	Capacity Grade	Engagement Grade	Capacity Plus Engagement Grade
ARIZONA																
Apache, Arizona	Micropolitan		10.30%	1.5	57%	63.3	64%	4,629	1.38	3.0	$0.25	3.7%	1.66	D	D	D
Cochise, Arizona	Micropolitan		8.40%	2.4	50%	47.2	80%	4,629	3.45	6.6	$1.50	6.3%	1.27	D	C-	D+
Coconino, Arizona	Metropolitan		6.60%	2.9	59%	87.9	84%	4,629	5.54	5.0	$3.42	6.7%	1.21	B-	C+	B-
Gila, Arizona	Micropolitan		7.00%	2.4	54%	57.9	78%	4,629	8.50	5.8	$1.20	8.6%	1.44	D	C	D+
Graham, Arizona	Micropolitan		13.30%	1.3	47%	35.4	76%	4,629	1.59	3.0	$0.53	3.6%	1.61	D	D+	D
Greenlee, Arizona	Micropolitan		7.10%	1.8	63%	53.2	83%	4,629	1.63	12.7	$0.13	5.9%	2.22	D	C	D+
La Paz, Arizona	Micropolitan		5.20%	1.6	33%	0.0	69%	4,629	5.58	5.1	$3.57	3.5%	1.37	D	D	D
Maricopa, Arizona	Metropolitan		6.40%	1.6	48%	77.9	83%	4,629	3.71	1.5	$4.57	6.8%	0.51	D+	D+	D
Mohave, Arizona	Micropolitan		5.50%	1.5	44%	44.2	78%	4,629	3.58	3.6	$1.62	4.9%	0.59	D	D	D
Navajo, Arizona	Micropolitan		9.60%	1.6	47%	60.0	71%	4,629	2.19	2.9	$0.66	5.1%	1.72	D	D	D
Pima, Arizona	Metropolitan		6.60%	2.1	54%	99.3	83%	4,629	3.78	1.9	$5.41	7.2%	0.53	C-	C-	C-
Pinal, Arizona	Metropolitan		7.00%	1.2	42%	29.3	73%	4,629	3.44	4.6	$0.89	4.9%	0.88	D	D	D
Santa Cruz, Arizona	Micropolitan		3.90%	2.1	43%	66.0	61%	4,629	2.98	2.5	$5.17	3.2%	0.81	D	D	D
Yavapai, Arizona	Metropolitan		6.80%	3.1	60%	57.5	85%	4,629	4.83	1.7	$2.95	7.7%	1.07	D	C+	C-
Yuma, Arizona	Metropolitan		5.60%	1.1	32%	54.6	66%	4,629	3.70	0.6	$1.37	4.4%	0.62	D	D	D
COLORADO																
Adams, Colorado	Metropolitan		6.90%	1.3	52%	73.7	79%	5,599	2.95	0.8	$1.32	4.5%	0.48	D	D	D
Alamosa, Colorado	Micropolitan		6.00%	4.7	56%	125.2	83%	5,599	4.45	6.6	$3.78	8.5%	1.40	B+	C+	B
Arapahoe, Colorado	Metropolitan		7.20%	2.0	60%	72.3	91%	5,599	5.88	2.7	$11.73	8.9%	0.41	C	A-	B+
Archuleta, Colorado	Micropolitan		7.90%	4.6	66%	82.2	87%	5,599	2.21	9.1	$3.15	9.0%	1.62	D	A-	B
Baca, Colorado	Rural		10.70%	5.1	67%	90.9	79%	5,599	1.77	22.7	$1.36	14.1%	4.65	C-	B+	C+
Bent, Colorado	Micropolitan		9.50%	2.3	50%	36.5	77%	5,599	3.89	0.0	$3.54	6.8%	2.00	D	C-	D
Boulder, Colorado	Metropolitan		5.90%	3.5	73%	115.1	93%	5,599	9.14	4.7	$14.29	8.9%	0.70	A-	A	A
Chaffee, Colorado	Micropolitan		7.70%	3.5	63%	66.6	89%	5,599	11.22	11.9	$1.65	12.4%	1.60	C-	A	A-
Cheyenne, Colorado	Rural		5.30%	4.0	67%	87.8	84%	5,599	4.81	46.6	$9.04	9.7%	4.48	D+	A-	B+
Clear Creek, Colorado	Metropolitan		3.70%	2.8	71%	22.4	93%	5,599	4.60	10.5	$0.64	2.1%	0.97	D	A-	C
Conejos, Colorado	Rural		18.80%	1.3	66%	51.1	72%	5,599	0.52	0.0	$2.77	3.2%	2.86	D+	C+	C-
Costilla, Colorado	Rural		5.10%	2.5	65%	27.4	68%	5,599	0.88	27.6	$2.56	0.6%	2.73	D	D+	D
Crowley, Colorado	Rural		6.80%	0.9	34%	23.4	78%	5,599	3.76	0.0	$0.14	3.0%	1.81	D	D	D
Custer, Colorado	Rural		4.90%	9.4	73%	30.4	90%	5,599	12.39	27.4	$0.96	6.8%	2.28	C	A-	B+
Delta, Colorado	Micropolitan		9.00%	3.5	62%	50.3	80%	5,599	6.16	10.3	$1.28	8.2%	1.94	D+	B	C+
Denver, Colorado	Metropolitan		10.10%	4.5	54%	209.8	79%	5,599	6.43	5.6	$15.68	6.9%	0.64	A	C	A
Dolores, Colorado	Rural		3.30%	2.7	76%	0.0	76%	5,599	8.87	54.0	$0.13	8.4%	4.34	D+	B-	C
Douglas, Colorado	Metropolitan		5.60%	1.5	76%	49.9	97%	5,599	10.08	1.4	$7.30	5.4%	0.45	D	A	A-
Eagle, Colorado	Micropolitan		4.70%	3.5	30%	90.8	87%	5,599	7.59	6.7	$19.96	3.4%	0.72	C	B	B-
El Paso, Colorado	Metropolitan		7.40%	2.6	59%	57.9	91%	5,599	5.34	2.6	$2.88	10.2%	0.57	B	B-	B
Elbert, Colorado	Metropolitan		5.80%	1.4	69%	17.1	93%	5,599	1.67	4.5	$1.05	4.5%	0.65	D	B	D+
Fremont, Colorado	Micropolitan		5.80%	2.5	49%	55.9	81%	5,599	4.68	6.3	$0.76	7.1%	1.02	D	D+	D
Garfield, Colorado	Micropolitan		6.30%	3.5	57%	82.4	85%	5,599	5.58	0.0	$5.72	5.6%	1.12	C	B-	C+

Area Name	Metro, Micro, Rural	Excluded County	Discretionary Income to Charity	Charities per 1000 people 2000	2004 Voter Aged Population Turn Out	Prim Care Phys Rate per 100,000 1997	Percent 25 and older with a High School Diploma 2000	Education spending per student, adjusted for regional cost differences (1998)	Visits Divided by Unduplicated Population 2002	Newspapers per 100 thousand persons 2002	Amount Given to Political Parties or Candidates per capita 2004	Religious Attendees as percent of County Population	Number of Congregations per 1000 people	Capacity Grade	Engagement Grade	Capacity Plus Engagement Grade
Gilpin, Colorado	Metropolitan		3.70%	2.7	72%	25.2	94%	5,599	3.44	20.7	$1.55	1.7%	0.63	D	B+	C+
Grand, Colorado	Rural		5.40%	5.2	66%	50.8	92%	5,599	7.19	7.7	$3.40	5.2%	1.37	C	A-	A-
Gunnison, Colorado	Micropolitan	Excluded		5.5	66%	41.0	94%	5,599	6.81	28.4	$4.04	5.3%	1.07	Incomplete	Incomplete	Incomplete
Hinsdale, Colorado	Rural		17.50%	12.7	78%	143.3	93%	5,599	9.30	128.7	$0.65	33.7%	5.06	A	A	A
Huerfano, Colorado	Micropolitan	Excluded		3.6	54%	89.3	78%	5,599	6.15	12.7	$0.93	5.4%	2.29	Incomplete	Incomplete	Incomplete
Jackson, Colorado	Rural		3.00%	5.1	73%	0.0	86%	5,599	5.15	65.1	$1.67	5.7%	3.17	D	B+	B-
Jefferson, Colorado	Metropolitan		5.80%	2.4	67%	62.2	92%	5,599	4.16	1.9	$6.90	8.5%	0.50	C	A-	B
Kiowa, Colorado	Rural		11.80%	4.3	76%	60.0	86%	5,599	6.98	0.0	$0.78	12.3%	4.32	D	A	A-
Kit Carson, Colorado	Micropolitan	Excluded		3.9	60%	27.9	77%	5,599	5.42	25.1	$2.99	18.0%	3.62	Incomplete	Incomplete	Incomplete
La Plata, Colorado	Micropolitan	Excluded		3.9	70%	102.1	91%	5,599	6.53	8.7	$7.65	7.5%	1.12	Incomplete	Incomplete	Incomplete
Lake, Colorado	Micropolitan		4.60%	2.7	52%	47.4	80%	5,599	2.82	12.8	$1.09	4.1%	1.41	C-	C-	C-
Larimer, Colorado	Metropolitan		5.80%	2.7	70%	86.7	92%	5,599	7.31	2.7	$3.89	11.4%	0.69	C-	A	A-
Las Animas, Colorado	Micropolitan		5.40%	3.1	55%	62.1	77%	5,599	4.29	6.5	$0.44	3.1%	1.45	D+	C-	D+
Lincoln, Colorado	Rural		4.40%	3.5	53%	35.6	82%	5,599	7.63	16.9	$1.35	12.3%	3.45	D	D	D
Logan, Colorado	Micropolitan	Excluded		2.9	54%	60.8	82%	5,599	6.12	9.5	$2.55	12.9%	1.56	Incomplete	Incomplete	Incomplete
Mesa, Colorado	Metropolitan		6.20%	2.6	66%	97.6	85%	5,599	3.63	4.9	$3.07	7.4%	0.96	C	C	C+
Mineral, Colorado	Rural	Excluded		10.8	77%	0.0	92%	5,599	10.17	0.0	$3.37	21.2%	6.02	Incomplete	Incomplete	Incomplete
Moffat, Colorado	Micropolitan		6.10%	3.0	59%	65.1	80%	5,599	5.79	7.5	$1.78	5.1%	1.67	D	C	C-
Montezuma, Colorado	Micropolitan		6.30%	3.6	62%	85.3	81%	5,599	18.46	0.0	$1.59	7.2%	1.68	C-	B+	B-
Montrose, Colorado	Micropolitan		6.90%	3.4	60%	46.2	81%	5,599	6.42	5.7	$1.69	9.2%	1.41	C-	B	C+
Morgan, Colorado	Micropolitan		5.00%	2.2	51%	55.7	71%	5,599	7.96	7.2	$1.06	10.6%	1.51	C	C-	C-
Otero, Colorado	Micropolitan		6.50%	3.4	57%	86.3	76%	5,599	9.74	15.1	$0.69	11.5%	2.56	B	C	B-
Ouray, Colorado	Rural	Excluded		8.0	74%	156.3	93%	5,599	7.13	25.2	$11.32	9.0%	2.14	Incomplete	Incomplete	Incomplete
Park, Colorado	Metropolitan		5.10%	3.8	64%	39.3	93%	5,599	2.99	12.4	$0.98	3.0%	1.03	D	B	C
Phillips, Colorado	Rural	Excluded		4.7	69%	115.4	82%	5,599	4.04	22.1	$2.26	18.6%	3.57	Incomplete	Incomplete	Incomplete
Pitkin, Colorado	Micropolitan	Excluded		9.4	70%	81.0	96%	5,599	24.62	13.4	$88.45	1.9%	0.74	Incomplete	Incomplete	Incomplete
Prowers, Colorado	Micropolitan	Excluded		2.8	48%	43.9	72%	5,599	8.01	7.0	$2.56	10.0%	2.62	Incomplete	Incomplete	Incomplete
Pueblo, Colorado	Metropolitan		6.00%	2.2	60%	97.1	81%	5,599	4.33	2.0	$3.72	6.7%	0.88	C+	D+	D+
Rio Blanco, Colorado	Rural		6.30%	3.0	66%	63.6	88%	5,599	5.79	16.7	$2.34	6.0%	3.17	C	B	C+
Rio Grande, Colorado	Micropolitan		8.20%	3.5	63%	96.5	78%	5,599	4.42	16.4	$2.46	10.1%	2.09	C+	B-	B-
Routt, Colorado	Micropolitan	Excluded		4.1	70%	81.3	95%	5,599	13.60	9.8	$4.05	5.3%	1.02	Incomplete	Incomplete	Incomplete
Saguache, Colorado	Rural	Excluded		5.6	57%	16.9	70%	5,599	2.49	0.0	$1.38	5.7%	3.72	Incomplete	Incomplete	Incomplete
San Juan, Colorado	Rural		6.40%	14.3	75%	0.0	92%	5,599	48.67	0.0	$4.13	5.7%	7.17	B-	A	A
San Miguel, Colorado	Rural	Excluded		8.9	57%	56.4	94%	5,599	32.38	41.9	$32.80	4.4%	1.36	Incomplete	Incomplete	Incomplete
Sedgwick, Colorado	Rural		8.80%	4.7	66%	38.4	79%	5,599	4.31	37.0	$1.17	14.1%	4.00	A-	B	A-
Summit, Colorado	Micropolitan	Excluded		4.3	63%	113.7	93%	5,599	6.37	4.0	$8.62	4.7%	0.72	Incomplete	Incomplete	Incomplete
Teller, Colorado	Metropolitan		5.90%	3.6	70%	20.2	94%	5,599	4.12	9.3	$1.68	4.9%	1.02	C	B+	C+
Washington, Colorado	Rural		9.70%	3.5	70%	0.0	82%	5,599	3.15	20.6	$4.60	17.9%	3.45	D	B+	C+
Weld, Colorado	Metropolitan		7.30%	1.9	59%	70.1	80%	5,599	3.85	2.0	$3.86	7.9%	0.87	C-	C-	D+
Yuma, Colorado	Micropolitan		8.00%	4.1	65%	74.7	80%	5,599	1.61	20.5	$11.38	14.0%	2.85	B-	B+	A-

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IDAHO																
Ada, Idaho	Metropolitan		7.00%	2.7	65%	88.3	91%	5,029	6.77	2.5	$3.05	8.0%	0.87	A	B	A
Adams, Idaho	Rural		5.70%	4.3	85%	51.8	81%	5,029	5.76	0.0	$1.47	5.4%	2.30	D+	C-	D
Bannock, Idaho	Metropolitan		9.80%	2.3	65%	82.6	88%	5,029	4.40	2.6	$0.99	2.7%	1.75	B+	C-	C+
Bear Lake, Idaho	Micropolitan		18.80%	1.2	74%	60.8	86%	5,029	11.99	0.0	$0.26	0.6%	3.12	C	B+	B+
Benewah, Idaho	Micropolitan		6.10%	3.5	64%	66.9	80%	5,029	2.34	11.1	$1.10	8.4%	1.64	B+	D+	C
Bingham, Idaho	Micropolitan		14.40%	1.5	60%	31.2	81%	5,029	9.84	11.8	$0.58	2.1%	2.01	B-	C	C
Blaine, Idaho	Micropolitan		6.20%	4.6	63%	133.6	90%	5,029	7.72	9.8	$25.43	2.5%	0.84	A	A-	A
Boise, Idaho	Metropolitan		8.10%	2.8	67%	0.0	86%	5,029	5.37	14.2	$0.41	3.3%	1.50	D+	C	D+
Bonner, Idaho	Micropolitan		10.50%	3.4	61%	48.9	86%	5,029	8.15	7.9	$3.62	4.7%	1.17	C+	C	C+
Bonneville, Idaho	Metropolitan		11.00%	2.0	67%	56.0	88%	5,029	5.45	1.2	$2.71	3.5%	1.78	B	C	C+
Boundary, Idaho	Micropolitan		7.40%	2.0	61%	60.7	80%	5,029	7.03	10.0	$0.71	9.3%	1.62	D+	C	C-
Butte, Idaho	Rural		11.90%	2.8	70%	31.8	83%	5,029	6.04	34.2	$0.86	1.8%	2.76	C	D+	D+
Camas, Idaho	Rural		6.90%	5.0	72%	0.0	88%	5,029	4.19	0.0	$1.43	0.0%	1.01	D	C	D
Canyon, Idaho	Metropolitan		8.50%	1.4	53%	54.8	76%	5,029	4.11	2.1	$0.66	8.4%	1.09	B	D	D
Caribou, Idaho	Micropolitan		13.10%	2.3	68%	27.1	87%	5,029	5.84	13.8	$1.08	2.4%	2.74	B-	C+	B-
Cassia, Idaho	Micropolitan		13.90%	1.9	55%	56.0	77%	5,029	5.83	4.6	$1.49	4.7%	2.19	B	C-	C
Clark, Idaho	Rural		11.90%	2.9	58%	0.0	64%	5,029	2.37	0.0	$0.25	1.9%	2.94	D	D	D
Clearwater, Idaho	Micropolitan		5.90%	3.9	65%	74.0	80%	5,029	2.87	23.6	$1.54	5.5%	2.58	B+	C-	C+
Custer, Idaho	Rural		11.10%	4.1	80%	47.1	85%	5,029	6.05	24.0	$2.08	1.4%	2.30	A-	C	B+
Elmore, Idaho	Micropolitan		7.40%	1.3	38%	72.3	87%	5,029	3.40	3.4	$0.47	5.8%	1.06	D	D	D
Franklin, Idaho	Metropolitan		23.40%	0.5	69%	37.0	88%	5,029		8.5	$0.37	0.2%	2.65	C	C-	C-
Fremont, Idaho	Micropolitan		16.40%	1.7	74%	8.5	80%	5,029	6.01	0.0	$0.47	2.3%	2.71	D	B-	C
Gem, Idaho	Metropolitan		8.30%	1.9	64%	48.4	79%	5,029	8.43	6.4	$0.56	6.9%	1.52	B-	D+	C
Gooding, Idaho	Micropolitan		10.60%	1.5	54%	22.1	73%	5,029	3.58	0.0	$0.87	6.5%	2.19	D	D+	D
Idaho, Idaho	Micropolitan		5.70%	2.6	71%	79.6	83%	5,029	5.54	12.9	$0.77	6.9%	2.19	C+	C+	C+
Jefferson, Idaho	Metropolitan		16.00%	0.7	72%	5.3	84%	5,029	7.97	0.0	$1.59	1.1%	2.35	D	C+	C-
Jerome, Idaho	Micropolitan		8.10%	1.8	53%	39.6	75%	5,029	8.73	5.4	$0.84	5.6%	1.58	D+	D+	D+
Kootenai, Idaho	Metropolitan		5.90%	2.2	65%	61.8	87%	5,029	6.58	2.6	$2.51	7.5%	0.70	C+	C-	C
Latah, Idaho	Micropolitan		8.10%	3.6	63%	64.6	91%	5,029	5.10	2.9	$2.20	7.6%	1.32	B	B+	A-
Lemhi, Idaho	Micropolitan		6.30%	4.5	72%	24.7	83%	5,029	4.83	12.9	$0.43	8.6%	2.18	D+	C+	C
Lewis, Idaho	Rural	Excluded	5.10%	4.5	67%	24.6	84%	5,029		26.8	$1.68	11.3%	5.07	Incomplete	Incomplete	Incomplete
Lincoln, Idaho	Rural		12.80%	1.0	64%	26.3	77%	5,029	2.22	0.0	$0.50	4.1%	2.47	D	D	D
Madison, Idaho	Micropolitan		25.70%	1.3	56%	80.8	89%	5,029	5.75	3.5	$0.26	0.2%	2.91	B-	C+	C+
Minidoka, Idaho	Micropolitan		13.60%	1.2	57%	19.4	74%	5,029	1.75	0.0	$0.44	4.4%	1.78	D	D	D
Nez Perce, Idaho	Metropolitan		4.90%	2.9	64%	100.5	86%	5,029	2.46	2.7	$1.19	10.9%	1.20	B+	D+	C+
Oneida, Idaho	Rural		17.40%	1.9	76%	0.0	86%	5,029	6.05	24.2	$0.28	0.8%	2.67	D	C-	D+
Owyhee, Idaho	Metropolitan		6.30%	1.5	50%	9.8	68%	5,029	2.72	18.3	$0.44	4.9%	2.44	B-	D	D
Payette, Idaho	Micropolitan		9.30%	1.8	56%	34.6	75%	5,029	3.48	0.0	$1.85	7.9%	1.70	C+	D	D+
Power, Idaho	Metropolitan		11.70%	1.2	62%	48.2	75%	5,029	5.06	13.5	$1.59	6.9%	2.12	B+	D	C
Shoshone, Idaho	Micropolitan		4.90%	4.9	57%	78.7	78%	5,029	5.70	7.6	$1.26	6.1%	1.89	B+	D	C-
Teton, Idaho	Rural		9.20%	2.7	73%	37.7	87%	5,029	1.63	0.0	$9.80	2.0%	1.83	D	B	C

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Twin Falls, Idaho	Micropolitan		8.40%	2.6	57%	76.7	81%	5,029	4.56	3.1	$1.48	8.8%	1.52	B	C-	C
Valley, Idaho	Rural		5.90%	7.2	78%	86.4	89%	5,029	13.83	26.3	$2.24	7.9%	2.09	A-	B-	B+
Washington, Idaho	Micropolitan		8.50%	2.8	62%	39.6	77%	5,029	5.18	20.1	$0.51	8.7%	2.51	C+	C	C-
MONTANA																
Beaverhead, Montana	Micropolitan		5.10%	4.8	64%	88.8	89%	6,349	1.50	11.1	$2.37	6.7%	2.06	A-	C	B
Big Horn, Montana	Micropolitan		4.60%	2.7	52%	95.1	76%	6,349	7.18	7.8	$1.22	5.9%	2.76	B-	D	D
Blaine, Montana	Rural		5.10%	3.9	60%	70.6	79%	6,349	1.74	14.6	$0.18	8.0%	3.85	B+	D	D
Broadwater, Montana	Rural		8.40%	2.3	72%	73.5	85%	6,349	12.76	22.7	$0.35	7.2%	2.51	C	C-	D+
Carbon, Montana	Metropolitan		6.00%	3.8	72%	53.0	88%	6,349	4.18	10.3	$7.15	7.7%	2.83	A-	B+	A
Carter, Montana	Rural		9.60%	5.9	73%	0.0	83%	6,349	1.53	0.0	$1.92	4.5%	4.41	B-	D	D+
Cascade, Montana	Metropolitan		6.10%	3.5	58%	65.7	87%	6,349	2.55	1.3	$1.41	7.9%	1.07	A-	D+	B-
Chouteau, Montana	Rural		7.50%	7.4	79%	19.1	87%	6,349	5.28	35.5	$1.86	10.5%	2.85	B+	C+	B
Custer, Montana	Micropolitan		4.70%	4.7	62%	107.3	85%	6,349	2.45	17.5	$1.65	8.7%	1.71	A	C	B+
Daniels, Montana	Rural		7.50%	6.4	76%	97.2	85%	6,349	10.83	51.3	$1.61	12.9%	5.45	A	C	B+
Dawson, Montana	Micropolitan		6.00%	4.7	69%	77.4	83%	6,349	3.71	11.4	$0.65	10.6%	2.21	A-	B-	B+
Deer Lodge, Montana	Micropolitan		5.80%	3.9	67%	50.0	85%	6,349	8.28	11.0	$0.34	6.1%	1.49	B	C+	B-
Fallon, Montana	Rural		8.30%	4.6	75%	0.0	86%	6,349	5.46	36.7	$0.25	22.7%	3.88	B+	C+	B
Fergus, Montana	Micropolitan		5.60%	4.1	69%	56.0	86%	6,349	6.61	8.6	$1.15	10.6%	2.94	A-	B+	A-
Flathead, Montana	Micropolitan		6.10%	4.2	66%	90.6	87%	6,349	4.86	3.9	$2.94	11.8%	1.28	A-	B	B+
Gallatin, Montana	Micropolitan		7.90%	4.9	70%	81.8	93%	6,349	6.64	7.0	$5.40	10.4%	1.12	A-	A	A
Garfield, Montana	Rural		2.90%	4.7	72%	0.0	85%	6,349	2.85	0.0	$0.25	9.7%	6.25	C	D	D
Glacier, Montana	Micropolitan		4.40%	2.2	53%	102.5	79%	6,349	3.19	15.2	$1.00	3.7%	1.59	C+	D	D+
Golden Valley, Montana	Rural	Excluded	3.60%	2.9	65%	0.0	71%	6,349		0.0	$2.47	7.5%	7.68	Incomplete	Incomplete	Incomplete
Granite, Montana	Rural		10.80%	3.9	79%	0.0	88%	6,349	1.75	34.8	$0.64	2.5%	2.83	C-	C	C-
Hill, Montana	Micropolitan		6.10%	4.1	58%	39.9	87%	6,349	3.85	6.1	$2.21	9.2%	2.46	A-	C	B
Jefferson, Montana	Rural		5.70%	4.1	76%	60.7	90%	6,349	3.78	19.3	$1.05	4.5%	2.09	B+	C	B-
Judith Basin, Montana	Rural		3.40%	2.1	78%	0.0	88%	6,349	3.80	44.5	$3.55	6.1%	4.29	B	B-	B
Lake, Montana	Micropolitan		6.00%	3.5	65%	78.9	84%	6,349	2.90	7.4	$1.62	7.0%	1.70	B	C	B-
Lewis and Clark, Montana	Micropolitan		6.30%	5.8	71%	110.8	91%	6,349	4.15	3.5	$3.43	9.0%	1.13	A	B+	A
Liberty, Montana	Rural		6.90%	7.9	73%	125.5	75%	6,349	4.31	49.3	$1.18	16.5%	5.10	A	D+	A-
Lincoln, Montana	Micropolitan		5.80%	3.9	61%	47.9	80%	6,349	4.97	16.0	$1.48	9.5%	2.12	B	C-	C+
Madison, Montana	Rural		8.60%	5.0	68%	87.0	90%	6,349	5.98	14.4	$4.36	6.2%	2.34	B-	C+	C+
McCone, Montana	Rural		8.60%	5.1	80%	49.1	86%	6,349	2.58	0.0	$3.31	13.6%	5.06	C+	C+	C
Meagher, Montana	Rural		3.30%	6.2	66%	166.2	83%	6,349	13.27	51.7	$13.71	4.7%	4.14	A	C+	A
Mineral, Montana	Rural		5.30%	3.9	64%	26.8	83%	6,349	2.74	0.0	$0.19	8.2%	3.09	B	D	D
Missoula, Montana	Metropolitan		9.30%	4.9	68%	84.4	91%	6,349	3.39	3.1	$3.88	6.2%	0.90	A	B-	A
Musselshell, Montana	Rural		5.70%	8.2	70%	43.4	83%	6,349	16.67	22.4	$0.62	7.1%	3.78	B	D	C-
Park, Montana	Micropolitan		6.80%	4.3	68%	69.1	88%	6,349	4.25	12.6	$2.34	6.4%	1.53	B+	B-	B+
Petroleum, Montana	Rural	Excluded		0.0	79%	0.0	83%	6,349	19.51	0.0	$2.65	5.9%	6.09	Incomplete	Incomplete	Incomplete
Phillips, Montana	Rural		7.00%	8.0	72%	40.8	82%	6,349	0.79	22.9	$1.16	10.5%	4.78	B	D+	C
Pondera, Montana	Micropolitan		5.40%	5.6	66%	62.2	82%	6,349	3.44	32.0	$1.21	9.2%	3.11	A	C+	B+
Powder River, Montana	Rural		6.00%	7.5	77%	0.0	83%	6,349	4.76	0.0	$1.01	12.8%	4.31	C-	C	C-

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Powell, Montana	Micropolitan		9.30%	6.4	52%	56.6	82%	6,349	2.54	14.2	$0.85	7.3%	2.37	B	D+	C
Prairie, Montana	Rural		4.60%	5.0	76%	0.0	79%	6,349	2.73	84.3	$0.20	39.0%	5.00	C+	B	B
Ravalli, Montana	Micropolitan		6.70%	3.4	68%	52.1	87%	6,349	2.63	10.6	$2.43	7.3%	1.30	B	C+	B
Richland, Montana	Micropolitan		7.80%	3.6	65%	68.7	84%	6,349	1.82	21.6	$1.23	13.6%	2.90	A	C+	B+
Roosevelt, Montana	Micropolitan		8.30%	3.3	60%	54.0	81%	6,349	2.68	9.6	$0.19	11.9%	3.95	B+	D+	C
Rosebud, Montana	Rural		5.60%	4.3	58%	29.4	84%	6,349	3.13	10.8	$0.64	7.6%	3.09	B	D	D
Sanders, Montana	Rural		4.50%	5.0	65%	48.8	81%	6,349	4.25	9.6	$0.36	8.4%	2.84	B-	D	D
Sheridan, Montana	Rural		8.30%	5.4	74%	69.1	81%	6,349	2.47	26.3	$0.47	18.9%	6.09	A	D+	B-
Silver Bow, Montana	Micropolitan		4.20%	3.8	64%	78.4	85%	6,349	3.31	6.0	$2.91	6.1%	1.13	A-	C	B
Stillwater, Montana	Rural		6.50%	3.8	67%	51.0	88%	6,349	2.38	11.8	$1.97	8.6%	2.07	C+	C-	C-
Sweet Grass, Montana	Rural		6.70%	2.2	74%	0.0	89%	6,349	2.88	27.7	$4.92	11.1%	3.05	D+	B-	C
Teton, Montana	Rural		8.50%	5.4	75%	31.5	83%	6,349	2.51	47.4	$1.50	13.4%	4.34	B+	C	B-
Toole, Montana	Micropolitan		6.70%	4.0	62%	62.3	81%	6,349	4.94	36.9	$0.71	12.4%	3.80	A	B	A-
Treasure, Montana	Rural	Excluded	4.60%	3.5	75%	0.0	86%	6,349		0.0	$1.15	13.9%	4.65	Incomplete	Incomplete	Incomplete
Valley, Montana	Micropolitan		11.00%	5.3	76%	60.3	84%	6,349	8.61	27.0	$2.08	10.7%	4.04	A	A-	A
Wheatland, Montana	Rural		3.60%	2.7	64%	85.7	69%	6,349	3.00	46.3	$2.13	14.6%	5.75	A-	D	D+
Wibaux, Montana	Rural		6.20%	5.6	73%	0.0	77%	6,349	6.91	100.5	$0.32	10.7%	5.62	A-	D	C+
Yellowstone, Montana	Metropolitan		6.00%	3.9	67%	82.7	89%	6,349	2.89	5.3	$3.06	11.5%	1.07	A	C+	A-
NEW MEXICO																
Bernalillo, New Mexico	Metropolitan		6.70%	2.9	60%	138.4	84%	5,339	2.85	2.6	$6.93	8.2%	0.58	A-	D	C-
Catron, New Mexico	Rural		8.90%	3.1	72%	71.6	78%	5,339	2.06	0.0	$1.63	6.0%	5.65	C+	D	D
Chaves, New Mexico	Micropolitan		7.50%	2.8	52%	55.5	73%	5,339	3.11	1.7	$6.59	10.9%	1.40	D	D	D
Cibola, New Mexico	Micropolitan		6.90%	1.7	43%	61.7	75%	5,339	2.03	3.8	$1.13	3.3%	1.84	D+	D	D
Colfax, New Mexico	Micropolitan		6.20%	4.3	58%	116.6	81%	5,339	5.61	21.1	$2.87	9.3%	2.82	B+	D+	C
Curry, New Mexico	Micropolitan		8.30%	2.2	45%	53.5	78%	5,339	3.30	2.2	$2.33	11.3%	1.27	C	D	D
De Baca, New Mexico	Rural		6.10%	3.1	68%	0.0	72%	5,339	4.61	93.5	$0.74	13.8%	2.23	C+	D	D
Dona Ana, New Mexico	Metropolitan		6.50%	2.0	50%	56.4	70%	5,339	1.93	1.7	$2.76	6.2%	0.82	C-	D	D
Eddy, New Mexico	Micropolitan		6.20%	2.7	56%	33.8	75%	5,339	4.83	3.9	$7.08	12.7%	1.59	C-	D	D
Grant, New Mexico	Micropolitan		7.40%	3.5	63%	73.4	79%	5,339	5.19	6.6	$2.26	6.4%	1.71	C+	D	D+
Guadalupe, New Mexico	Micropolitan		2.20%	1.7	63%	0.0	68%	5,339	5.21	21.9	$0.28	3.7%	4.27	C+	D	D
Harding, New Mexico	Rural	Excluded		2.5	83%	0.0	72%	5,339		0.0	$1.64	5.7%	9.88	Incomplete	Incomplete	Incomplete
Hidalgo, New Mexico	Micropolitan		9.60%	3.5	57%	15.7	69%	5,339	3.05	37.5	$1.19	5.8%	2.53	C	D	D
Lea, New Mexico	Micropolitan		7.20%	2.4	46%	42.6	67%	5,339	3.68	3.6	$6.66	11.6%	1.80	C+	D	D
Lincoln, New Mexico	Micropolitan		11.60%	3.1	60%	75.0	85%	5,339	1.22	0.0	$5.11	12.0%	1.91	C+	D+	C-
Los Alamos, New Mexico	Micropolitan		7.00%	6.2	81%	136.8	96%	5,339	13.18	0.0	$10.61	14.3%	1.58	B+	A	A
Luna, New Mexico	Micropolitan		10.70%	2.3	43%	50.2	60%	5,339	7.37	4.0	$1.05	5.1%	1.12	D	D	D
McKinley, New Mexico	Micropolitan		7.50%	1.8	48%	121.2	65%	5,339	0.88	0.0	$0.68	4.6%	1.08	C	D	D
Mora, New Mexico	Rural		4.80%	2.1	68%	0.0	70%	5,339	1.28	0.0	$1.70	7.0%	6.56	C+	D	D
Otero, New Mexico	Micropolitan		8.60%	2.6	49%	48.4	81%	5,339	3.18	1.6	$1.36	9.2%	1.16	D	D	D
Quay, New Mexico	Micropolitan		8.20%	4.2	57%	59.4	74%	5,339	2.08	0.0	$1.38	13.4%	3.64	C	D	D
Rio Arriba, New Mexico	Micropolitan		10.50%	2.5	53%	34.4	73%	5,339	7.03	2.4	$2.78	5.3%	2.09	C	D	D
Roosevelt, New Mexico	Micropolitan		8.40%	2.8	55%	54.0	75%	5,339	5.04	0.0	$2.18	13.4%	2.28	C	D	D

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San Juan, New Mexico	Metropolitan		6.90%	1.7	54%	67.6	77%	5,339	3.47	1.7	$2.48	6.8%	1.20	C+	D	D
San Miguel, New Mexico	Micropolitan		5.60%	2.6	60%	79.5	75%	5,339	2.63	6.7	$2.61	3.2%	1.89	B-	D	D
Sandoval, New Mexico	Metropolitan		5.80%	1.8	64%	55.9	86%	5,339	3.49	1.0	$3.50	3.4%	0.81	D+	D	D
Santa Fe, New Mexico	Metropolitan		8.40%	5.1	64%	102.6	85%	5,339	6.48	0.7	$20.88	2.9%	0.71	A	C	A-
Sierra, New Mexico	Micropolitan		6.10%	2.3	52%	54.6	76%	5,339	12.21	46.2	$1.04	6.1%	1.73	C+	D	D
Socorro, New Mexico	Micropolitan		5.30%	2.2	63%	55.4	72%	5,339	2.10	5.6	$4.45	4.3%	2.10	D+	D	D
Taos, New Mexico	Micropolitan		6.60%	5.2	65%	71.5	79%	5,339	10.17	3.2	$3.95	2.9%	2.27	A-	D+	C+
Torrance, New Mexico	Metropolitan		7.10%	1.8	58%	20.4	77%	5,339	7.81	0.0	$2.29	7.8%	1.89	D	D	D
Union, New Mexico	Rural		5.30%	2.9	68%	48.6	80%	5,339	3.74	25.3	$3.91	16.5%	3.35	D	D	D
Valencia, New Mexico	Metropolitan		6.00%	1.2	54%	28.6	76%	5,339	2.25	1.5	$2.04	4.2%	0.74	D	D	D
NEVADA																
Carson City, Nevada	Metropolitan		5.10%	3.1	54%	76.5	83%	5,478	4.73	3.7	$2.25	5.1%	0.63	B	D	D
Churchill, Nevada	Micropolitan		7.90%	1.9	60%	65.9	85%	5,478	3.33	4.1	$0.60	4.1%	0.79	D	D	D
Clark, Nevada	Metropolitan		5.90%	1.1	45%	65.7	80%	5,478	4.07	2.0	$6.99	3.1%	0.35	D+	D	D
Douglas, Nevada	Micropolitan		5.50%	1.8	71%	55.4	92%	5,478	3.81	2.3	$13.56	3.8%	0.65	C-	C-	C-
Elko, Nevada	Micropolitan		5.50%	1.7	52%	50.7	79%	5,478	5.16	2.2	$2.47	3.5%	0.99	D	D	D
Esmeralda, Nevada	Rural	Excluded		4.1	76%	0.0	79%	5,478	6.94	0.0	$0.00	7.8%	2.06	Incomplete	Incomplete	Incomplete
Eureka, Nevada	Rural	Excluded	12.40%	1.2	67%	53.8	77%	5,478		0.0	$0.79	1.2%	3.03	Incomplete	Incomplete	Incomplete
Humboldt, Nevada	Micropolitan		4.40%	2.2	55%	63.0	78%	5,478	4.97	6.7	$1.46	4.2%	1.12	D	D	D
Lander, Nevada	Micropolitan	Excluded	6.50%	3.1	62%	42.2	79%	5,478		19.3	$0.45	6.7%	3.11	Incomplete	Incomplete	Incomplete
Lincoln, Nevada	Rural		17.80%	3.4	68%	45.1	83%	5,478	6.20	23.6	$10.91	5.9%	3.36	C	D	D
Lyon, Nevada	Micropolitan		7.80%	2.1	59%	24.3	82%	5,478	3.41	0.0	$0.93	3.0%	0.90	D	D	D
Mineral, Nevada	Micropolitan		9.50%	3.7	66%	87.3	77%	5,478	3.29	21.0	$0.25	7.3%	2.96	C-	D	D
Nye, Nevada	Micropolitan		6.40%	1.6	53%	33.1	79%	5,478	4.19	5.8	$1.28	4.8%	1.26	D	D	D
Pershing, Nevada	Rural		5.40%	1.8	39%	18.6	76%	5,478	2.32	15.2	$0.89	4.3%	1.49	D	D	D
Storey, Nevada	Metropolitan		1.60%	2.9	79%	0.0	87%	5,478	1.61	0.0	$0.67	1.5%	0.88	D	D	D
Washoe, Nevada	Metropolitan		5.90%	2.4	56%	92.9	84%	5,478	4.42	2.5	$7.51	3.6%	0.45	A-	D	D
White Pine, Nevada	Micropolitan		9.30%	2.8	59%	78.3	82%	5,478	2.00	11.6	$0.27	3.2%	1.96	D+	D	D
UTAH																
Beaver, Utah	Rural		14.80%	1.2	63%	51.2	83%	3,804	6.41	0.0	$0.33	0.3%	2.83	D	B+	C
Box Elder, Utah	Micropolitan		19.20%	1.3	61%	48.7	88%	3,804	5.71	2.3	$0.97	1.3%	2.36	C-	A-	B+
Cache, Utah	Metropolitan		20.00%	1.5	61%	58.9	90%	3,804	4.34	1.1	$0.91	1.1%	2.75	C-	A-	B
Carbon, Utah	Micropolitan		11.50%	1.7	59%	52.5	81%	3,804	5.98	5.0	$0.50	2.0%	2.30	D+	B+	C+
Daggett, Utah	Rural	Excluded	11.80%	0.0	71%	0.0	84%	3,804	1.09	0.0	$0.00	0.0%	2.17	Incomplete	Incomplete	Incomplete
Davis, Utah	Metropolitan		20.00%	0.8	66%	53.5	92%	3,804	3.38	0.4	$1.40	1.3%	1.85	D+	A-	B
Duchesne, Utah	Micropolitan		19.20%	1.0	59%	62.3	81%	3,804	5.09	6.7	$0.83	1.5%	2.37	D	B-	C
Emery, Utah	Rural		19.20%	1.7	68%	18.4	84%	3,804	6.86	9.4	$0.49	0.8%	2.58	D	B+	C+
Garfield, Utah	Rural		19.20%	1.9	70%	47.6	86%	3,804	6.24	0.0	$1.29	0.0%	3.17	D	A-	B
Grand, Utah	Micropolitan		8.20%	3.7	58%	49.3	83%	3,804	7.91	34.4	$2.17	4.9%	2.12	C	B+	B
Iron, Utah	Micropolitan		18.40%	1.5	63%	46.8	89%	3,804	3.97	2.8	$0.45	1.3%	2.69	C	A-	B+
Juab, Utah	Metropolitan		18.70%	0.9	62%	82.8	83%	3,804	6.66	0.0	$0.95	0.0%	2.19	D	B-	D+
Kane, Utah	Micropolitan		10.90%	1.8	70%	51.5	86%	3,804	6.15	33.2	$1.87	5.0%	3.14	C	A	A-

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Millard, Utah	Micropolitan		24.30%	0.7	63%	40.6	87%	3,804	6.69	16.2	$0.29	2.1%	2.66	D	A	B+
Morgan, Utah	Metropolitan		19.40%	0.7	68%	43.4	93%	3,804	5.36	0.0	$0.43	0.3%	2.38	D	A	B-
Piute, Utah	Rural	Excluded	20.30%	0.7	79%	0.0	86%	3,804	3.76	0.0	$0.00	0.0%	2.09	Incomplete	Incomplete	Incomplete
Rich, Utah	Rural		21.50%	0.5	63%	0.0	92%	3,804	3.77	0.0	$10.13	0.0%	2.55	D	A	A
Salt Lake, Utah	Metropolitan		14.90%	2.6	56%	98.0	87%	3,804	4.96	1.2	$3.17	1.8%	1.52	B+	B-	B+
San Juan, Utah	Micropolitan		26.70%	1.5	55%	21.9	70%	3,804	4.42	7.2	$0.54	1.7%	2.36	D	B	C-
Sanpete, Utah	Micropolitan		21.10%	1.1	54%	76.6	85%	3,804	6.22	8.6	$0.78	0.3%	2.64	C+	B+	B
Sevier, Utah	Micropolitan		16.10%	1.1	62%	27.7	86%	3,804	5.72	5.2	$0.35	0.9%	2.18	D	B+	C+
Summit, Utah	Metropolitan		7.80%	2.7	65%	139.8	93%	3,804	5.39	3.1	$10.58	5.0%	1.41	C	A	A-
Tooele, Utah	Metropolitan		13.40%	0.7	53%	35.0	86%	3,804	11.46	2.2	$0.70	1.2%	1.74	D	C+	D
Uintah, Utah	Micropolitan		14.20%	0.6	57%	58.8	80%	3,804	8.85	3.8	$0.42	2.1%	2.14	D	B-	D+
Utah, Utah	Metropolitan		23.60%	0.9	57%	57.0	91%	3,804	4.82	0.8	$2.42	0.5%	2.69	C+	B+	B+
Wasatch, Utah	Micropolitan		15.30%	1.4	62%	70.4	89%	3,804	3.19	5.9	$1.16	0.2%	1.91	D	A-	B-
Washington, Utah	Metropolitan		19.80%	1.4	62%	54.7	88%	3,804	4.57	5.0	$3.21	1.1%	2.07	C+	B+	B+
Wayne, Utah	Rural		15.20%	2.8	76%	42.2	89%	3,804	5.79	0.0	$3.03	0.8%	3.99	C-	A	A
Weber, Utah	Metropolitan		15.10%	1.3	51%	68.3	85%	3,804	5.71	1.0	$1.10	2.7%	1.60	C+	C	C
WYOMING																
Albany, Wyoming	Micropolitan		6.80%	4.7	65%	87.5	94%	6,790	3.57	3.1	$3.38	7.2%	1.31	B+	A-	A-
Big Horn, Wyoming	Rural		10.50%	2.3	67%	36.3	83%	6,790	3.71	26.7	$0.89	6.9%	3.23	D	C-	D
Campbell, Wyoming	Micropolitan		6.30%	2.6	58%	68.6	88%	6,790	5.42	5.5	$3.49	9.3%	1.16	D+	C+	C
Carbon, Wyoming	Micropolitan		6.60%	3.6	61%	50.5	84%	6,790	2.06	13.0	$4.85	7.0%	2.75	C-	C+	C
Converse, Wyoming	Micropolitan		7.90%	3.7	65%	24.4	86%	6,790	4.43	8.1	$3.73	8.7%	1.91	D	B	C-
Crook, Wyoming	Rural		7.50%	5.3	77%	34.5	86%	6,790	8.09	34.1	$4.19	8.5%	2.89	D	B	C+
Fremont, Wyoming	Micropolitan		8.50%	3.2	65%	100.3	85%	6,790	4.26	19.4	$2.84	8.2%	2.07	B+	C+	B
Goshen, Wyoming	Micropolitan		7.10%	4.1	65%	46.7	85%	6,790	4.31	8.1	$1.59	9.0%	1.60	C-	B	C+
Hot Springs, Wyoming	Micropolitan		6.70%	7.0	70%	106.8	84%	6,790	7.30	21.2	$0.74	10.9%	2.66	A	A-	A
Johnson, Wyoming	Micropolitan		8.60%	6.6	70%	117.9	90%	6,790	13.31	13.5	$4.89	10.9%	2.40	A-	A	A
Laramie, Wyoming	Metropolitan		4.80%	3.3	64%	100.7	89%	6,790	4.88	1.2	$3.50	8.1%	1.02	B-	C+	B-
Lincoln, Wyoming	Micropolitan		15.70%	2.5	76%	64.9	88%	6,790	3.90	20.1	$3.54	2.1%	2.33	B-	A-	A-
Natrona, Wyoming	Metropolitan		7.60%	3.7	64%	97.4	88%	6,790	3.28	5.9	$8.45	8.6%	0.96	B+	B	B+
Niobrara, Wyoming	Rural		7.40%	6.2	78%	38.2	87%	6,790	6.57	0.0	$0.50	8.4%	4.99	C-	C+	C
Park, Wyoming	Micropolitan		7.50%	4.2	73%	85.7	88%	6,790	6.35	11.6	$7.36	9.5%	1.94	A-	A	A
Platte, Wyoming	Micropolitan		7.10%	3.7	71%	46.8	85%	6,790	9.75	11.4	$3.45	9.1%	2.61	C+	A	A-
Sheridan, Wyoming	Micropolitan		14.10%	5.6	68%	103.2	88%	6,790	6.84	3.7	$5.67	8.9%	1.20	A	A-	A
Sublette, Wyoming	Rural		4.10%	5.1	76%	105.3	89%	6,790	16.59	32.3	$9.38	7.1%	2.53	C+	A-	A-
Sweetwater, Wyoming	Micropolitan		6.50%	1.9	62%	45.3	87%	6,790	6.42	5.4	$1.34	5.4%	1.60	D	B-	C
Teton, Wyoming	Micropolitan		15.10%	6.4	76%	186.7	95%	6,790	15.81	10.8	$113.71	4.7%	0.82	A	A	A
Uinta, Wyoming	Micropolitan		9.00%	1.9	61%	29.6	85%	6,790	5.72	0.0	$1.38	3.7%	1.98	D	C+	D+
Washakie, Wyoming	Micropolitan		10.30%	4.0	72%	57.9	86%	6,790	6.98	12.6	$2.33	11.8%	2.65	B-	A	A-
Weston, Wyoming	Micropolitan		6.00%	2.7	66%	46.1	85%	6,790	6.46	15.1	$1.92	6.6%	2.41	D	B	C+
ROCKIES REGION																
Rockies Mean			8.70%	3.3	63%	56.7	83%	5,481	5.59	11.8	$3.55	6.9%	2.28			
Rockies Median			7.10%	2.9	64%	55.1	83%	5,599	4.76	6.2	$1.60	6.5%	2.07			

Notes:

Reflections on Inland Colony Status and Regional Sovereignty:

1. Ed Marston, "Home and Hope in the Rockies," The 2004 State of the Rockies Report Card (Colorado Springs: Colorado College Sustainable Development Workshop, 2004), 5.
2. Richard Lamm, "The Angry West Revisited," speech at Colorado College, May 4, 2004, http://www.coloradocollege.edu/Dept/EC/Faculty/Hecox/RockiesWeb/Rockies/web-content/KeynoteSpeech04.html.
3. Charles Wilkinson, "Endurance and Sovereignty Among the Indian Nations of the Rocky Mountain West," speech at Colorado College, May 3, 2004, tape recording, Colorado College Department of Economics.
4. John Wesley Powell, Report on the Lands of the Arid Region of the United States, with a More Detailed Account of the Lands of Utah, in Seeing Things Whole, William deBuys, ed., (Washington: Island Press, 2001).
5. Patricia N. Limerick, The Legacy of Conquest (New York: W.W. Norton and Company, 1987), 82.
6. Michael P. Malone and Richard W. Etulain, The American West: A Twentieth Century History (Lincoln: University of Nebraska Press, 1989), 11.
7. Terry L. Anderson, The Not So Wild, Wild West (Stanford, CA: Stanford University Press, 2004), 6.
8. Daniel Kemmis, Community and the Politics of Place (Norman, OK: University of Oklahoma Press, 1990), 33.
9. Donald Worster, "The Legacy of John Wesley Powell," in Reopening the American West, Hal K. Rothman, ed. (Tucson: University of Arizona Press, 1998) 88.
10. Pat Ford, "Balkanized, Atomized Idaho," in Reopening the Western Frontier, Ed Marston, ed. (Washington D.C.: Island Press, 1989) 282.
11. John W. Powell, "Address to the Montana Constitutional Convention," Helena, Montana, August 9, 1889, in Seeing Things Whole, William deBuys, ed. (Washington, D.C.: Island Press, 2001), 240.

From the Old West to the New West and Back Again:

Notes:

1. See Anderson and Hill (2004) for a summary of how the new institutional economics applies to the West.
2. See Anderson and McChesney (1994) for the original use of this concept.
3. See Lueck (2003) for a discussion of why first possession is often used to establish ownership.
4. Quoted in Osgood (1929, 183).
5. For example, frontier land claims clubs had fewer requirements for retaining a claim than did the homestead acts. Moreover, the requirements that did exist were more productive than many of those under the homestead acts such as the requirement that trees be planted on the arid plains where they would not grow. See Anderson and Hill (1983).
6. For details of this story, see Anderson and McChesney (1994) and Anderson and Lueck (1992). The latter show that trust lands are 40 to 90 percent less productive than fee simple lands on reservations when measured in terms of the value of agricultural output per acre.
7. For a complete discussion of the role of the Northern Pacific in the establishment and early management of Yellowstone, see Anderson and Hill (1996).
8. For a discussion of how public lands g□
9. For a discussion of the conflicts over instream and offstream water uses on the Klamath, see Meiners and Kosnick (2003).
10. For an account of early amenity entrepreneurs, see Anderson and Leal (1997).
11. Though their efforts have been largely unsuccessful, they have reduced the security of some grazing permits. With security of tenure reduced, there is less incentive for long-term stewardship, as Watts and LaFrance (2001) have shown.
12. For a complete discussion, see Yablonski (2004).
13. For a complete discussion, see Anderson and Snyder (1997) and Landry (1998).
14. The success of such programs is described by Leal and Grewell (2001).

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The Role of Law in the Toxic Legacy in the Rockies:

1. The following table and the summaries given in the follow□The laws themselves are
complex and full of subtleties. A full understanding requires careful analysis.
2. The Clean Air Act CAA) became law in 1970 as an amendment to a very weak law□
public health by limiting pollution of the ambient air by chemicals that cause chroni□
air to adopt existing □
3. The Clean Water Act (CWA) became law in 1972 as an amendment to a weak law that lacked enforcement authority. Under it, the Environmental Protection Agency (EPA) establishes national limits on pollutants from point sources such as industrial outfalls and sewage treatment plants. The limits are based on what can be achieved by using existing technology, not on what would be required to protect the public health. Industry must obtain permits from EPA for the discharge of pollutants from point□shable
or swimable or drinkable) and set pollut□ The CWA also requires that before a person or company engages in dredging or filling of a navigable river or certain wetlands, that person or company must obtain a permit form the Corps of Engineers.
4. The National Environmental Policy Act (NEPA) became law in 1969. □cantly affect
the environment. The EIS must analyze all direct and indirect effects of the proposed federal action on the environment. The EIS must be made available for public review and comment.
5. RCRA became law in 1976 and was amended in 1984. Its primary provisions ar□ -
age or disposal. RCRA controls the li□nal resting place – that is, to the treatment or
storage or disposal site of the hazardous waste. One objective of RCRA is to phase out the disposal of hazardous waste on land; technology is to be favored over burial. RCRA also imposes requirements on the disposal of non-hazardous wastes; however, these requirements are much less pr□
oversight of these wastes by local and state governments.
6. CERCLA is often referred to as the Superfund law. It was enacted by a lame duck Congress and signed by a lame duck president in 1980. The purpose of CERCLA is to clean up releases of hazardous materials. Cleanups can be accomplished either by EPA using money from a fund (called the Superfund) that was financed by a tax on bulk chemicals, or EPA can issue orders directing a responsible party to carry out the cleanup, or any person or company can undertake the cleanup and recover its costs □
7. The Endangered Species Act (ESA) became law in 1973. It calls for the list□
petition by any person or can be initiated by the government. The ESA makes it illegal for any person to take a listed endangered or threatened species. Taking is defined broadly under the ESA; it includes killing, harassing, or wounding. Modifying critical habitat, even if it is privately owned land, that □

a listed species; it prohibits federal agencies from taking action that will damage criti□
and to attempt to increase their numbers so they can be de-listed.

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Methods:

Indicator Rankings

For a given indicator in the 2005 State □ -
tie□ .

Each geogr□ ferent variables. The Z-Score
for a geographic unit and for a given variable i□
standard deviation of the variable for the group.

Z = (X – Xmean)/Sx

Z is the Z-Score.
X is the value of a variable for a geographic unit.
Xmean is the mean value of the variable for all units in the group.
Sx is the standard deviation of the variable for all units in the group.

After each unit is assigned a Z-Score for each variable that makes up the indicator, each unit is assigned an overall Z-Score by averaging the unit's different Z-Scores. (Sometimes different Z-Scores are given different weight as indicated in that section of the report card.) Then, each unit is ranked in order of its overall Z-Score for the indicator.

In the event that a geographic unit is missing data for any of the variables in an indicator, that unit is dropped from the indicator.

Indicator Grades

After the units are ranked□

Percentile Earning Grade	% of Counties Earning Grade	Letter Grade Earned
100% to 93%	8%	A
92% to 85%	8%	A-
84% to 77%	8%	B+
76% to 70%	7%	B
69% to 64%	6%	B-
63% to 54%	10%	C+
53% to 44%	10%	C
43% to 36%	8%	C-
35% to 28%	8%	D+
27% to 21%	7%	D
20% to14%	7%	D-
13% to 7%	7%	F+
6% to 0%	6%	F
Missing Data		Incomplete

Note: For the Civic Capacity and Engag□
27% of the counties.

Other Statistics Methods Used

Mean & Median: F□ The mean is the average
of the dataset. The median is the middle value of the dataset, if all values are put in order. Depending on the values in the dataset, one method may have been deemed more appropriate than the other.

Standard Deviation: The standard deviat□
method for comparing and combining different sets of data as detailed in the Indicator Rankings method above.

Correlation: A correlation measures the de□
and other sets of data. Most basically, a corr□
insignificant values are included in this report.

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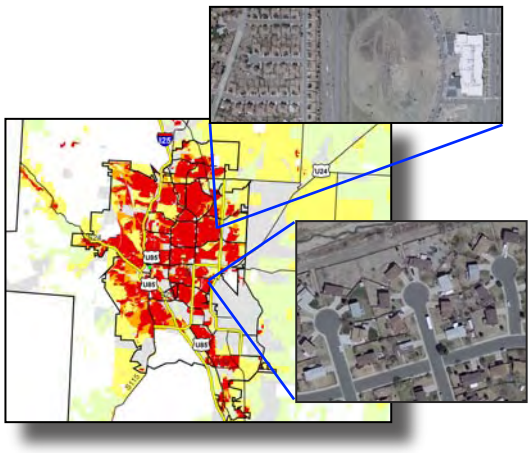
THE 2005 COLORADO COLLEGE STATE OF THE ROCKIES REPORT CARD

MEASURES MANY ECONOMIC, DEMOGRAPHIC, SOCIAL AND ENVIRONMENTAL CONDITIONS THROUGHOUT THE EIGHT-STATE ROCKIES REGION TO ASSESS TRENDS, ASSIGN GRADES, AND IDENTIFY THE MOST CIVICALLY ENGAGED COUNTIES

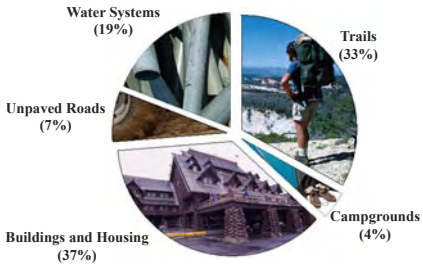
- Challenge Essay by Terry Anderson: "From the Old West to the New West and Back Again"
- Rockies Baseline: Vital Signs for a Region in Transition
- Grading the Rockies: Regional Performance on 6 New In-depth Measures and Overall Civic Engagement and Capacity

Figure 2. Sprawl in the Colorado Springs, Colorado MSA
Satellite image source: USGS

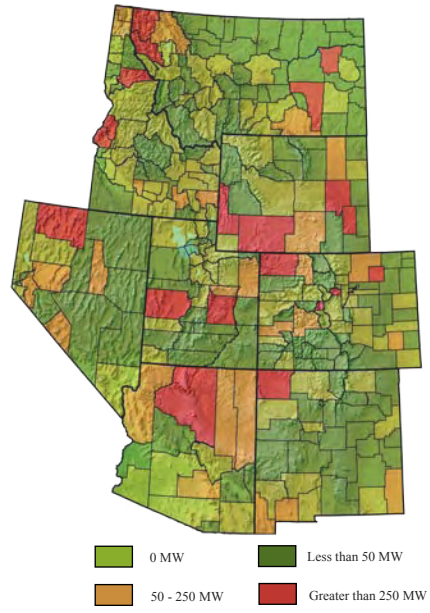


- General Research, Analysis, and Editorship by Prof. Walt Hecox, F. Patrick Holmes, and Bryan Hurlbutt
- 110 full-color pages of Essays, Analysis, Maps, and Data
- Photographs of the Rockies and Colorado College in the Field

Figure 1.
Existing Deferred Maintenance by Category for the Rockies Region National Parks as of October, 2004



Installed Electric Production Capacity, MW Per 10,000 Residents by County, 2003
(Source: Penwell MapSearch)



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