

CHAPTER 1

INTRODUCTION

Many disaster losses—rather than stemming from unexpected events—are the predictable result of interactions among three major systems: the physical environment, which includes hazardous events; the social and demographic characteristics of the communities that experience them; and the buildings, roads, bridges, and other components of the constructed environment. [*Disasters by Design, A Reassessment of Natural Hazards in the United States*, Dennis S. Mileti, Joseph Henry Press, Washington, D.C., 1999, page 3.]

Purpose of plan

A major function of this mitigation plan is to identify activities which can eliminate or reduce the risk residents of the state face from natural hazards. The hazard assessment portion of the plan represents extensive data gathering, generation, and analysis. This adds credibility to the quality of the hazard assessment and vulnerability analysis. The quality of the work enhances its value for application in future mitigation planning by both the State and the counties for the purpose of reducing or eliminating the long-term risk to human life and property from all hazards. The plan complies with the Disaster Mitigation Act of 2000 and supersedes a previously approved plan.

Determining the level of risk a community faces depends in large measure on an understanding of what has or could happen. Due to an infrequency of significant hazard events in Wyoming, residents are often unaware of the potential for loss of life and damage to property from certain hazards such as earthquakes, severe blizzards, and flooding. Today, only a small percentage of the state's population is aware of the tremendous impact the Blizzard of 1949 had on Wyoming and its neighboring states. The lists of historical events found in Chapters 4 through 19 are based on research of the most comprehensive data available and provide a sound foundation for the vulnerability analysis part of the plan. The data and analyses can be useful to elected officials in establishing policy relating to mitigation of hazards for the benefit of ensuing generations.

As used by the Federal Emergency Management Agency, *mitigation* refers to any sustained action taken to reduce or eliminate long-term risk to people and property from hazards and their effects. Mitigation measures can include structural and nonstructural activities, such as keeping homes away from flood plains, engineering bridges to withstand earthquakes, and creating and enforcing effective building codes to protect property from severe storms, earthquakes, floods, and other hazards. These activities can occur before, during, and after a disaster. Involvement of a wide range of participants in this process increases the feasibility of implementing mitigation projects as resources become available.

State Mitigation Goals

As described in Chapter 21, **State Mitigation Strategy**, ten goals are identified as part of the state's strategy for helping state government and local jurisdictions to increase disaster resistance through implementation of mitigation projects (measures designed to reduce or eliminate long-term risk to human life and property from all hazards).

1. Educate, on an ongoing basis, residents, business/industry representatives, and government officials on the hazards and risks in their area to allow them to make informed decisions as to what level of feasible and realistic disaster resistance they desire for themselves and their communities.
2. Enhance cooperation between government authorities at all levels and private partners to articulate accurate and specific needs for mitigation activities for inclusion in future revisions of the Wyoming Multi-Hazard Mitigation Plan.
3. Strengthen infrastructure and lifelines, including but not limited to: gas and electrical transmission and distribution lines, communication lines, water distribution systems, and the state highway system as a means of preventing loss of life, reducing damages, and reducing loss of revenue.
4. Strengthen and improve disaster resistance of facilities owned and operated by the State of Wyoming to prevent injury and loss of life and to reduce potential property damage.
5. Encourage all jurisdictions and private partners to utilize geographic information systems (GIS) digital technology for continued hazard analysis and identification of feasible mitigation measures for inclusion in local and state mitigation plans and related planning documents and programs.
6. Fund research leading to a reduction of hazard impacts.
7. Reduce or eliminate the long term risk to human life and property.
8. Improve capabilities to detect or warn of hazards before damage occurs.
9. Minimize economic losses.
10. Reduce state and local costs of disaster response and recovery.

State of Wyoming Profile

Wyoming is located in the Rocky Mountain section of the western United States. Wyoming is bounded on the north by Montana, on the east by South Dakota and Nebraska, on the south by Colorado and Utah, and on the west by Utah, Idaho and Montana. Wyoming is one of three states entirely bounded by straight lines. From the north border to the south border it is 276 miles; from the east to the west border, 375 miles. Wyoming is the tenth (10th) largest state, with an area of 97,814 square miles but with the smallest population (50th) at 563,626, according to the 2010 census. Wyoming has several medium sized cities with concentrated populations and vast areas of extremely low population densities. Overall the population density is just over 5 persons per square mile. Cheyenne, the State Capitol, is located in the southeast corner of the state and is the largest city with a population of 56,915.



Geology

The Great Plains meet the Rocky Mountains in Wyoming. The state is a great plateau broken by a number of important mountain ranges. The highest point is Gannett Peak at 13,804 feet and lowest point is the Belle Fourche River at 3,099 feet. The mean elevation of Wyoming is 6,700 feet. Approximately 47% of the state is owned by the Federal Government. The Rocky Mountains are located along the western edge, as are Yellowstone National Park and Grand Teton National Park. The Big Horn Mountains are in the north central part of the state with the Laramie Mountains extending from the central part of the state to the southeast. The Bear Lodge

Mountains, which are part of the Black Hills, are located in the northeast part of the state. The south central part of Wyoming includes the Medicine Bow Mountains. There are 10 National Forests including the Thunder Basin National Grasslands, 2 National Parks, 2 National Monuments, 1 National Historic Site, and 1 National Recreation Area.

Wyoming's economy is dependent upon mining (coal and trona), natural gas production, agriculture, and tourism. Critical infrastructure includes electrical power generation and transmission and the F.E. Warren Air Force Base, home of the 90th Space Wing. The largest recurring events include the University of Wyoming home football and basketball games, Cheyenne Frontier Days, and the Wyoming State Fair.



Climate

The climate is semiarid. Annual precipitation varies throughout the state from as little as five inches to as much as 45 inches a year, some in the form of rain and some in snow. Because of its elevation, Wyoming has a relatively cool climate; the normal mean temperature is 45° Fahrenheit. However, Wyoming's climate can include extreme temperature highs and lows. Above 6,000 feet the temperature rarely exceeds 100° F. In the low lying areas, July low temperatures range from 50° to 60° F. In the summer, parts of the state can experience temperatures above 100° and in the winter, extended temperatures below 0° are common. Wyoming experiences a lot of wind. The average wind speed is 12.9 mph. Heavy snowstorms, blizzards, floods, tornados and wildland

fires are naturally-occurring disasters typical for Wyoming.

Government

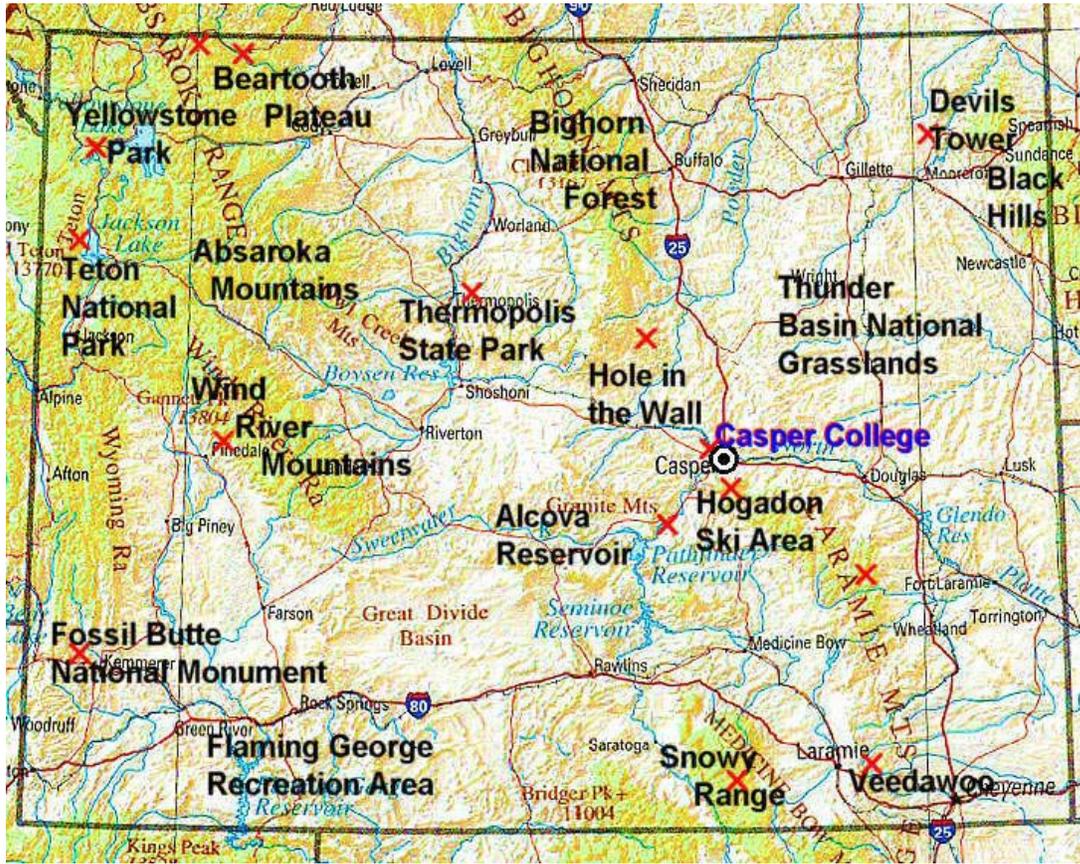
Wyoming is divided into twenty three (23) counties and seven (7) Homeland Security Regional Response areas, with ninety nine (99) incorporated municipalities. There is one Indian Reservation located in the central portion of the state. The Public Safety agencies include 23 Sheriff Offices, 56 Police Departments, 134 Fire Departments, 66 Ambulance agencies and 41 Dispatch centers. The State of Wyoming has 11 agencies that have public safety roles including law enforcement, corrections, health, livestock, state parks, transportation, forestry, fire marshal, state engineer and homeland security.

Transportation

Three interstate highways transect the state, Interstate 80 along the southern portion of the state, Interstate 25 runs from the southeast to the north central and bisects with Interstate 90 which runs through the northeastern part of the state. The Union Pacific Railroad runs east to west along the southern portion of the state. Burlington Northern Santa Fe Railroad has a northern route across the northeast part of Wyoming and a north south route from the northeast to the southeast, which is shared with the Union Pacific Railroad. A road map of the State of Wyoming and a map of Wyoming mountain ranges, rivers, reservoirs, national parks & places of interest follow.



<http://geology.com/cities-map/wyoming.shtml> Accessed 1/11/2010



Wyoming Mountain Ranges, Rivers, Reservoirs, National Parks & Places of Interest by Jim Krumm

<http://www.caspercomsci.com/pages/wyoming.htm> - Accessed 1/19/2011

Population Growth

The 2010 Census reveals Wyoming has experienced higher percentage growth greater than experienced over the United States over all. Wyoming's growth rate over the past ten years exceeded 14% while the national growth rate was only 9.7%. Despite Wyoming's faster paced growth, it remains predominately rural with a population density of not quite 6 persons per square mile and a total population of 563,626.

State or Region	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010
Wyoming											
Population	145,965	194,402	225,565	250,742	290,529	330,066	332,416	469,557	453,588	493,782	563,626
Percent Change	57.7%	33.2%	16.0%	11.2%	15.9%	13.6%	0.7%	41.3%	-3.4%	8.9%	14.1%
People per sq. mile	1.5	2.0	2.3	2.6	3.0	3.4	3.4	4.8	4.7	5.1	5.8
Density Rank	50	50	50	50	50	50	51	51	51	51	51

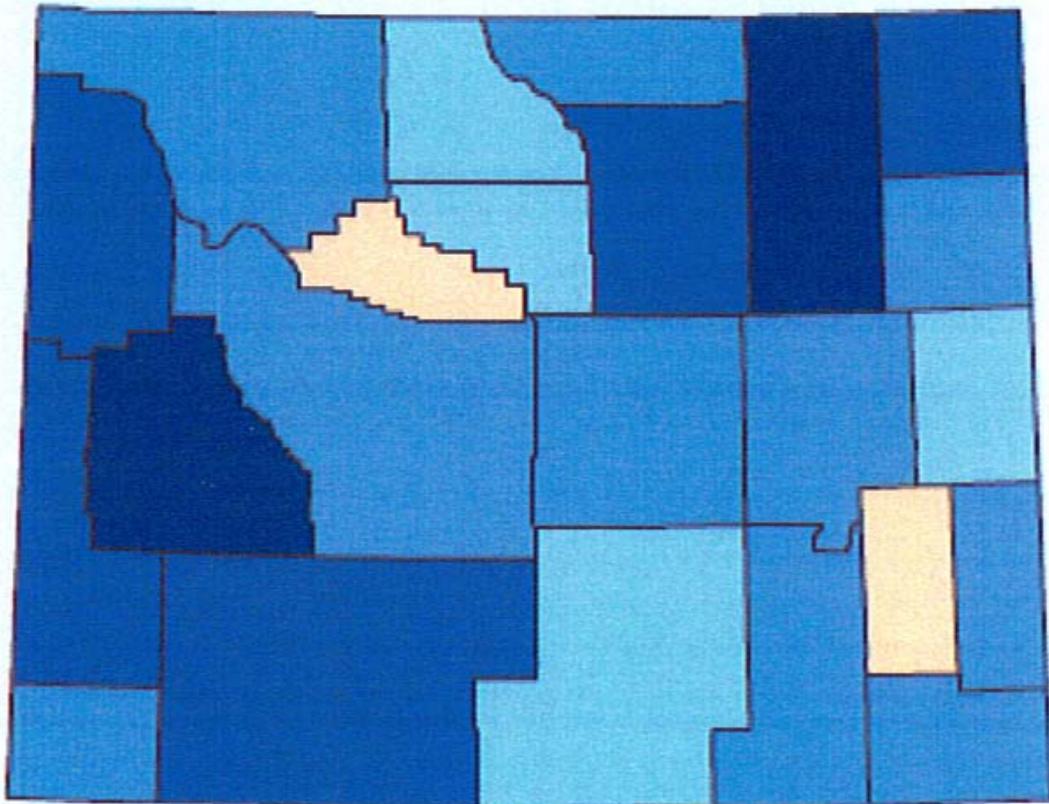
<http://2010.census.gov/2010census/data/index.php> Accessed 5/3/2011

2010 CENSUS RESULTS

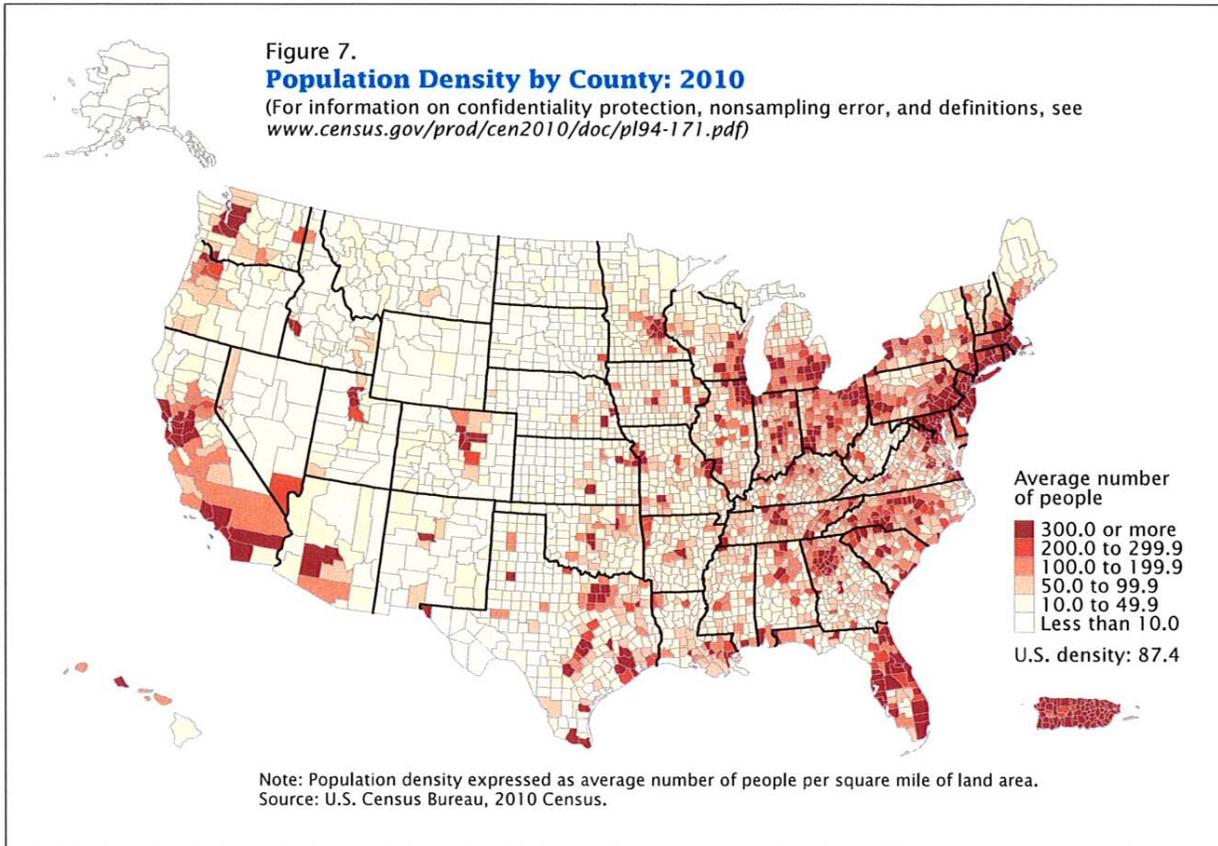
Wyoming

STATE POPULATION: 563,626

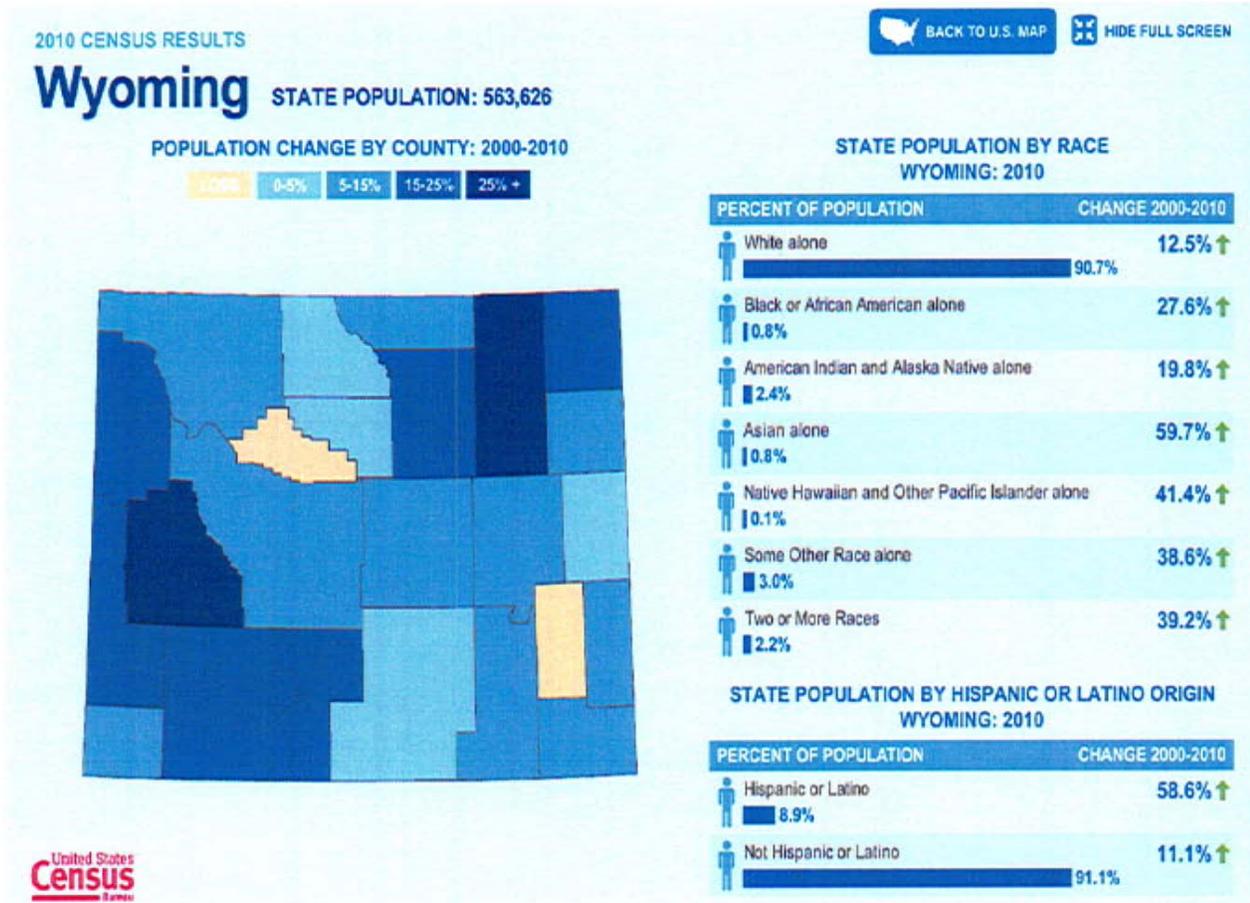
POPULATION CHANGE BY COUNTY: 2000-2010



<http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf> Accessed 5/3/2011



With a population of 563,626, Wyoming remains the state with the smallest population, as well as the least densely populated state with less than 10 persons per square mile. After twenty years of losing population (1980-1990) or maintaining a fairly steady population (1990-2000), the 2010 Census revealed Wyoming's population overall has increased at a slightly greater rate than the U.S. population overall in the years between 2000 and 2010. Two counties experienced a loss in population; two counties experienced a greater-than 25% increase in population, with the majority of the state's counties increasing in population by between 5%-16%.



<http://2010.census.gov/2010census/data/index.php> Accessed 4/28/2011

Development

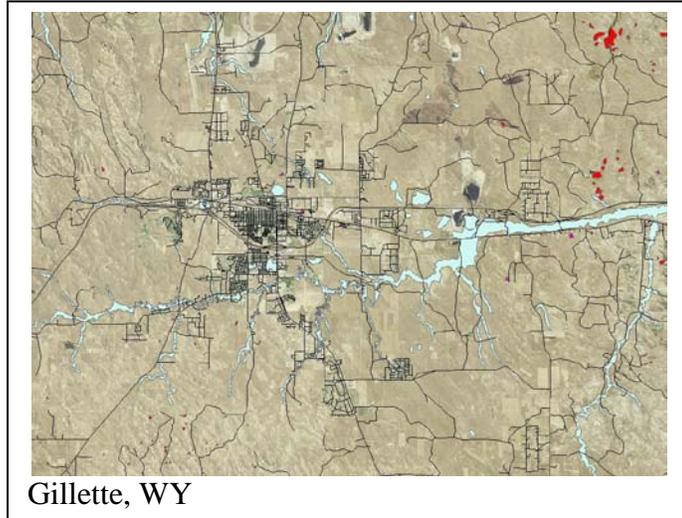
A majority of the development has occurred in areas of recent energy development such as Gillette, Rock Springs, Rawlins, Pinedale, and Big Piney. Homes are being constructed as rapidly as the work force allows, as are hotels and motels. Many housing areas are established by industry, and the facilities are temporary. The following represents a brief description of the socio-economic situation as well as a brief description of the growth expected in each of these communities and the impact of hazards. This data was collected through meetings with the planning offices, and/or Homeland Security offices of each county as well as examining local and county land use plans and Socioeconomic Profiles generated by Headwaters Economics (2008). On each map, mines and mine boundaries are illustrated in violet, landslides are represented by red, and identified flood-prone areas are highlighted in blue.

Gillette

Gillette typifies the energy-driven economy in Wyoming. Gillette has a very low unemployment rate, a high growth rate, and low commercial and infrastructure growth rates.

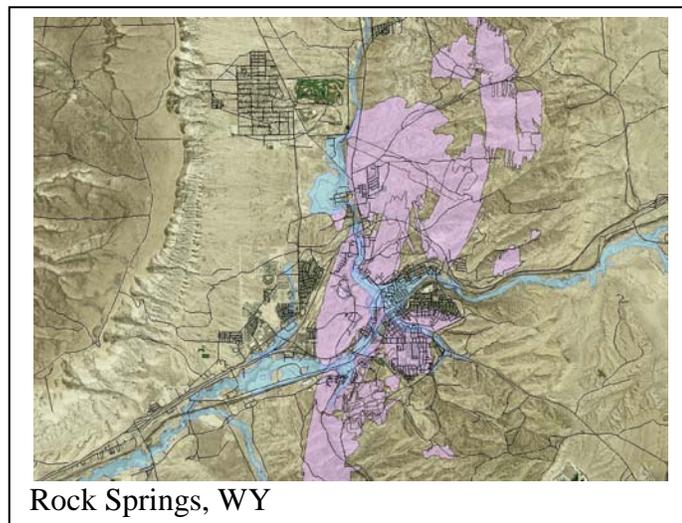
Estimates place the 2007 population growth rates at over eleven percent. However, it has been reported that housing construction, infrastructure development, and support industries are not increasing at a rate commensurate with the population and energy specific workforce growth. Because the infrastructure is insufficient to support the rise in population, many energy workers taking jobs in Gillette do not bring their families. This trend exacerbates the problem of insufficient employees in support industries. Much of the development in Gillette is temporary in nature, including small mobile homes and mobile trailers. For permanent residences, detailed, site specific data was not available for analysis. The temporary and transient nature of housing and development prohibits a detailed and accurate vulnerability assessment for this area.

The majority of the housing developments in Gillette are intended to be built north-east and south-east of the center of town. The city of Gillette maintains an annually updated comprehensive plan that tracks development and planning objectives and policies. Additionally, Campbell County (where Gillette is located) maintains a Multi-Hazard Mitigation Plan.



Rock Springs

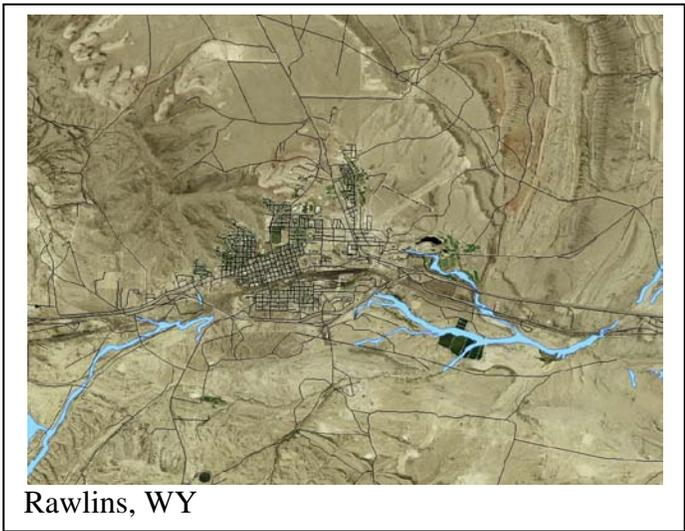
Rock Springs is another Wyoming city experiencing a burst of development driven by the energy industry. While population growth is showing signs of stabilizing, recent findings by the County, estimate 915 new houses being built by 2017. Proportionately, this represents rapid population growth for the city of Rock Springs. Much of the development in Gillette is temporary in nature, including small mobile homes and mobile trailers. For permanent residences, detailed, site specific data was not available for analysis. Additionally, pre-existing motels and hotels are utilized to house the population growth.



The Master Land Use Plan was last updated in 1983. The County is working towards allocating money and other resources to updating and revising this plan. Rock Springs faces a complex mix of flood and abandoned mine hazards within city boundaries.

Rawlins

Driven by a combination of the State Penitentiary and the energy industry, Rawlins experiences rapid population as well as socio-economic change. Rawlins experiences rapid economic growth with the growth of the mining industry. Coalbed methane has tremendous potential to spur economic growth. The population and economy are also growing due to service, non-farm proprietors, government and trade sector growth. County leaders mentioned significant growth in construction, mechanical services, truck shops, and electronic support facilities. Service sector jobs are expected to continue growing, largely because of technology improvements.



The temporary and transient nature of housing and development prohibits a detailed and accurate vulnerability assessment for this area.

Carbon County, where Rawlins is located, published their Land Use Plan in 1998. Fortunately, the city is threatened by minimal flood areas and no abandoned mine lands. With these factors, growth can be adequately planned and encouraged.

Big Piney and Pinedale

With the second highest cost of living in Wyoming (following Teton County), and a high growth rate driven by the energy industry, Sublette County (home of Big Piney and Pinedale) has a shortage of housing and support industries. Projections currently indicate the growth rate of Sublette as well above the national average. Sublette County has distinct concerns, as pandemic of energy driven, rapid growth corresponding with high costs of living.



Fifty-four percent of all Sublette County private property owners live outside the county. Twenty seven percent live outside of the state. These issues combine to create a socio-development situation with an overtaxed infrastructure.

The majority of energy workers live in temporary housing, known as “man camps.” These camps can be seen sprouting in south-western Big Piney. Often they expand into camp grounds, trailer parks, free land, or makeshift facilities. Because of the nature of these facilities, they are very difficult to regulate and plan for. The temporary and transient nature of housing and development prohibits a detailed and accurate vulnerability assessment for this area. Sublette County completed a Master Plan update late in 2007 and is currently in the process of adopting and implementing the plan.

Authority

The approval of this plan demonstrates the State of Wyoming's commitment to working toward fulfilling the goals mentioned above through implementation, to the extent possible with available resources, of proposed mitigation measures and a project identified in Chapter 22, Proposed State Mitigation Activities, and authorizes the responsible agencies identified in the plan to execute their responsibilities. The plan has been formally adopted <date> by the Governor's Appointed Representative (GAR). Letters of State Agency Endorsement and the State of Wyoming's Letter of Adoption are attached as appendices, a sample of which is at the end of this Introduction.

This plan has been developed to comply with the requirements of 114 Statute 1558 Public Law 106–390—Oct. 30, 2000, the Disaster Mitigation Act of 2000 [H.R. 707], specifically:

SEC. 104. MITIGATION PLANNING; MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES.

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) is amended by adding at the end the following:

“SEC. 322. MITIGATION PLANNING.

“(a) REQUIREMENT OF MITIGATION PLAN.—As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.

“(c) STATE PLANS.—The State process of development of a mitigation plan under this section shall—

“(1) identify the natural hazards, risks, and vulnerabilities of areas in the State;

“(2) support development of local mitigation plans;

“(3) provide for technical assistance to local and tribal governments for mitigation planning; and

“(4) identify and prioritize mitigation actions that the State will support, as resources become available. [42 USC 5121]

This plan is Appendix 3 to the comprehensive emergency management plan and program required by Wyoming Statute §19-13-104(c) (ii). As provided in Wyoming Statute §19-13-104(c) (vi), the Governor may “delegate any administrative authority vested in him under this act, provide for the subdelegation of any such authority...” including the authorities of Wyoming Statute §19-13-104(c) (i) to “make, amend and rescind the necessary orders, rules and regulations to carry out this act within

the limits of the authority conferred upon him herein, with due consideration of the plans of the federal government. The governor may assign to a state agency any activity concerned with the mitigation of the effects of a disaster...”

Additionally, the State of Wyoming shall comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding. [CFR 44 § 13.11] The State of Wyoming, Office of Homeland Security, will amend the plan whenever necessary to reflect: (1) New or revised Federal statutes or regulations or (2) a material change in any State law, organization, policy or State agency operation. The Wyoming office of Homeland Security will obtain approval for the amendment and its effective date, but need submit for approval only for the amended portions of the plan. [CFR 44 § 13.11]

Following is a sample letter to be utilized by multiple, appropriate state agencies documenting their alliance with the Wyoming Office of Homeland Security in the adoption of the State Multi-Hazard Mitigation Plan and their agreement to comply with applicable statutes.

Additionally, a sample adoption letter to be utilized by the Governor of Wyoming’s Appointed Representative (GAR) follows.

SAMPLE ADOPTION LETTER-State Agencies

<date>

Director
Wyoming Office of Homeland Security
122 West 25th Street
Herschler Building, First Floor East
Cheyenne, WY 82002

Dear Director:

The <Department Name> endorses the Wyoming Multi-hazard Mitigation Plan and the goals set forth therein in compliance with the Disaster Mitigation Act of 2000. The <Department Name> is committed, to the extent possible with available resources, to implement the proposed projects and measures assigned in Chapter 22, Table 2.2.

The <Department Name> will continue to share information pertinent to The Plan with your office and assist in periodic reviews and updates.

Additionally, the Wyoming <Department Name> shall comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding. [CFR 44 § 13.11] The Wyoming <Department Name> will accommodate amendment of the plan whenever necessary to reflect: (1) New or revised Federal statutes or regulations or (2) a material change in any State law, organization, policy or State agency operation. [CFR 44 § 13.11]

Sincerely,

SAMPLE ADOPTION LETTER-Wyoming Office of Homeland Security

<date>

Regional Administrator
FEMA Region VIII
Denver Federal Center, Bldg. 710
P.O. Box 25267
Denver, CO 80225-0267

Dear Regional Administrator:

The Wyoming Multi-Hazard Mitigation Plan has been endorsed by all state agencies with primary implementation responsibilities. Copies of the endorsement letters are attached.

Through this letter, the State of Wyoming, acting through the Governor's Appointed Representative, formally adopts the plan, including all goals and potential mitigation projects, in compliance with the Disaster Mitigation Act of 2000 and Wyoming Statute §19-13-104 (c) (i), (ii), and (vi).

The State of Wyoming shall comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding. [CFR 44 § 13.11] Wyoming will amend the plan whenever necessary to reflect: (1) New or revised Federal statutes or regulations or (2) a material change in any State law, organization, policy or State agency operation. [CFR 44 § 13.11]

We appreciate the assistance your staff has provided in the generation, review, and adoption of this plan. We realize the importance of such planning efforts, and remain committed to maintaining a productive working relationship with you and your staff.

Sincerely,