

**Wyoming State  
Geological Survey**  
*Strategic Plan 2009-2010*

## **Quality of Life Result**

Wyoming natural resources are managed to maximize the economic, environmental, and social prosperity of current and future generations.

## **Agency**

Wyoming State Geological Survey

## **Contribution to Wyoming Quality of Life**

Currently continuing to accelerate its transition from a traditional, reactive state agency to a modern, dynamic, and applied organization, the Wyoming State Geological Survey (WSGS) strives to provide state decision-makers with the best science possible to ensure that development occurs to benefit Wyoming residents, promote economic prosperity, and protect state resources. In addition to ensuring Wyoming has the geologic, geophysical, and geohydrologic information necessary to solve existing problems and anticipate future challenges, the WSGS collaborates closely with other state agencies, various organizations, and stakeholders to solve multidisciplinary problems. The WSGS also supplies the geologic knowledge necessary for the beneficial and responsible development of Wyoming's unconventional energy resources, including shale gas, bypassed underpressured natural gas, deep gas (more than 15,000 feet below ground), in-situ coal gasification, uranium, and liquid synfuels from oil shale and coal.

While working to increase public awareness of its contributions, the WSGS endeavors to provide Wyoming residents with the most accurate, up-to-date information on geologic hazards, natural resource and energy issues, water issues, and other geology-related topics so they can make informed decisions about issues that affect them. The WSGS aims to reduce risks associated with geologic hazards such as landslides, volcanism, earthquakes, avalanches, and floods, and would like the opportunity to help modernize the Yellowstone Volcano Observatory seismic grid.

Ultimately, WSGS employees seek to establish the agency as a premier organization dedicated to applied geologic, geophysical, and geohydrologic research, such as investigating geological CO<sub>2</sub> sequestration; developing new exploration strategies and techniques designed for Wyoming's natural resources; creating strategies to prevent or minimize waste of natural resources; constructing integrated geohydrologic models; building three-dimensional rock-fluid models of Wyoming's geologic basins; evaluating the potential for commercial metals/mineral development in Wyoming; and developing visualization techniques for a variety of geologic, geophysical, and geohydrologic processes.

## **Basic Facts**

The WSGS has 27 employees and operated with a 2007-2008 budget of \$5,536,906 in general funds.

In the spring of 2004, State Geologist Ronald Surdam presented a new vision of a proactive, dynamic state geological survey. Because of the support subsequently provided by Governor Freudenthal and the Wyoming Legislature, much of the WSGS vision has become reality. The reorganization of the agency emphasizes teamwork between scientists with diverse interests instead of traditional sec-

tions with rigid, narrowly-defined boundaries that restrict communication. Though individuals typically cannot solve the many complex natural resource problems facing Wyoming, focused, talented, integrated teams that bridge traditional barriers and emphasize common-sense problem solving in realistic timeframes can. The WSGS has recently acquired expertise and data in areas such as geohydrology, geophysics, and geological process modeling/visualization. Combined with existing agency talent, these new additions and organizational changes allow the WSGS to provide technology, strategies, techniques, and information to help the state address a multitude of natural resource issues.

Examples of this new approach include conducting a statewide geologic CO<sub>2</sub> sequestration inventory, studying coalbed methane water issues in the Powder River Basin, leading the preparation of the FutureGen proposal, developing new exploration strategies and techniques for unconventional energy resources, and launching the Granite Mountains Metals Investigation Project.

In addition, the WSGS collaborates closely with other state agencies to solve key problems. For example, projects with the DEQ (determining the remaining assimilative capacity of the Powder River Basin), SEO (modeling the potentiometric surface in the Powder River Basin), and the University of Wyoming Department of Renewable Resources (evaluating the efficacy and efficiency of low-cost mineral cation exchangers to treat CBM produced water) are currently underway. The WSGS also continues to work closely with the Water Development Commission, Oil and Gas Conservation Commission, Pipeline Authority, and Office of State Lands and Investments.

## Performance

**The WSGS evaluated the performance metrics used in its 2007-2008 strategic plan, and found that those metrics did not accurately depict the agency's contribution to Wyoming and its residents. We will therefore use the new metrics listed below to better capture the agency's contribution to quality of life in Wyoming.**

1. *Effort devoted to projects that apply geologic knowledge and research to natural resource and energy issues in Wyoming.* This metric will have two components: percentage of WSGS projects that involve applied geologic research and address natural resource/energy issues; and percentage of WSGS employees involved in applied research/natural resource/energy projects. Including both measurements will allow us to capture both overall agency effort and collaboration between employees with different areas of expertise.

Specifically, the WSGS proposes to develop an unbiased, process-oriented, geologic, geochemical, and geohydrologic understanding of the Atlantic Rim area (**see exception budget request**). The deliverables from this project will elevate the discussion of energy development issues in the Atlantic Rim area from an emotional exchange to a conversation based in sound, unbiased, scientific observations and principles. Currently, all sides are making decisions about the Atlantic Rim area in a data void. This project will provide the state with sound, unbiased information upon which high-quality resource management decisions can be based.

Additionally, the WSGS proposes to evaluate superior geological CO<sub>2</sub> sequestration sites in Wyoming (**see exception budget request**). The CO<sub>2</sub> sequestration project proposed by the WSGS is vital to the future of Wyoming. To attract commercial entities involved in clean coal technologies, Wyoming must stay at the forefront of geological CO<sub>2</sub> sequestration. To be part

of the future of power generation in the U.S., it is essential to demonstrate that Wyoming has substantial, well-documented geological sites that can safely and effectively store CO<sub>2</sub> on a commercial scale.

2. *Effort devoted to collaborative projects.* This metric will have two components: percentage of projects that involve collaboration with other agencies and organizations; and percentage of employees involved in collaborative projects. Including both measurements will allow us to capture both overall agency effort and collaboration between employees with different areas of expertise.
3. *Effort devoted to projects related to conventional energy resources.* This metric will have two components: percentage of projects related to conventional energy resources; and percentage of employees involved in projects related to conventional energy resources. Including both measurements will allow us to capture both overall agency effort and collaboration between employees with different areas of expertise.

Specifically, the WSGS will develop an initiative to encourage the discovery of new conventional oil and gas fields in Wyoming (**see exception budget request**). This project will enable the WSGS to proactively provide the state, the public, and industry with an improved way to evaluate all aspects of the energy resources in the Bighorn and Powder River basins. It is very likely that this high-priority project will directly increase the discovery of new fields, thereby prolonging and increasing state revenues.

4. *Effort devoted to projects related to unconventional energy resources.* This metric will have two components: percentage of projects related to unconventional energy resources; and percentage of employees involved in projects related to unconventional energy resources. Including both measurements will allow us to capture both overall agency effort and collaboration between employees with different areas of expertise.

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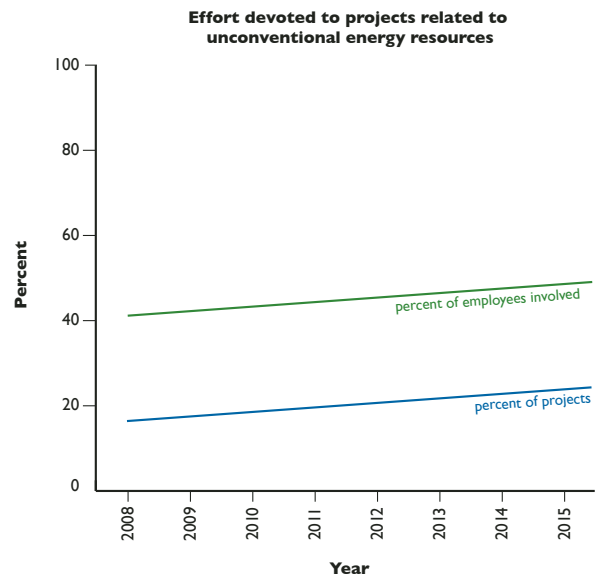
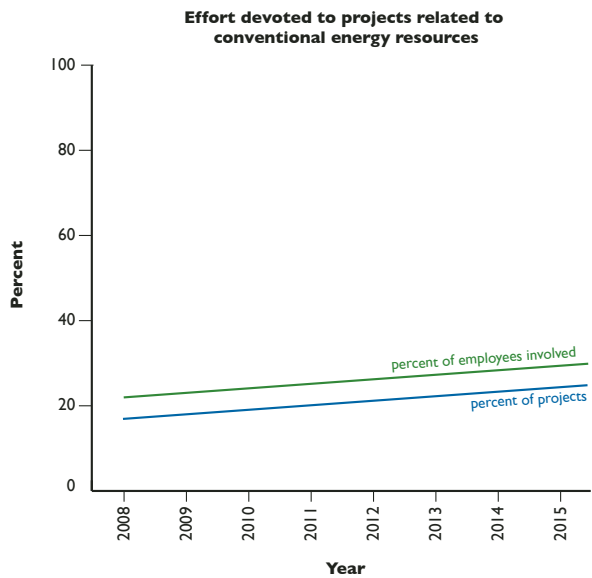
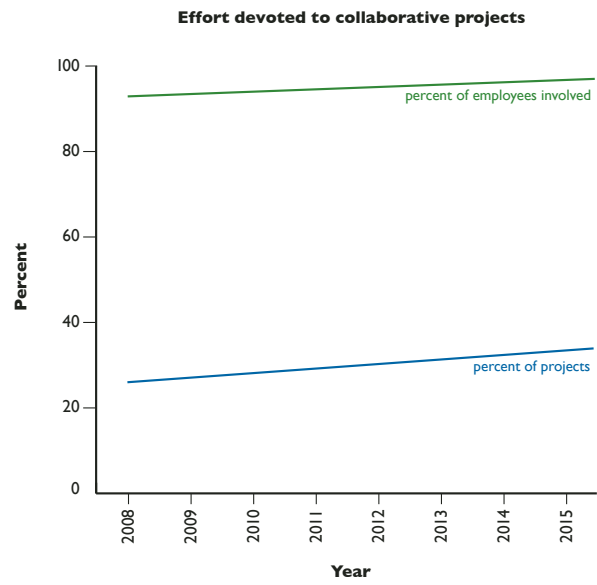
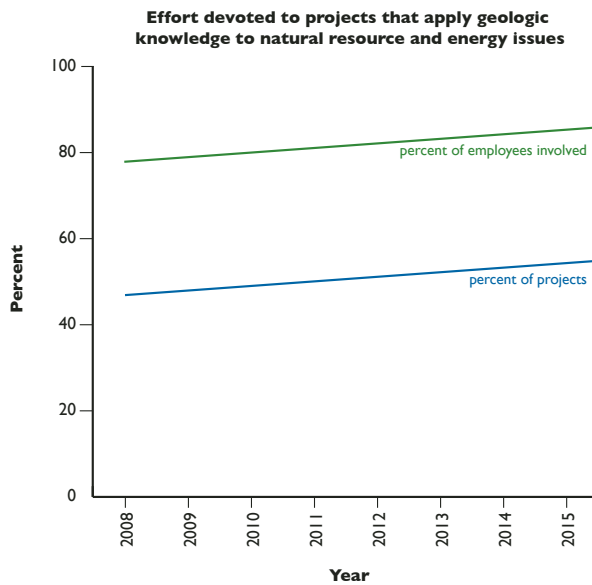
5. *Effort devoted to projects and activities that directly benefit the public.* This metric will have two components: percentage of projects that directly benefit the public; and percentage of employees involved in public outreach/educational activities, hazards-related projects, and water-related projects.

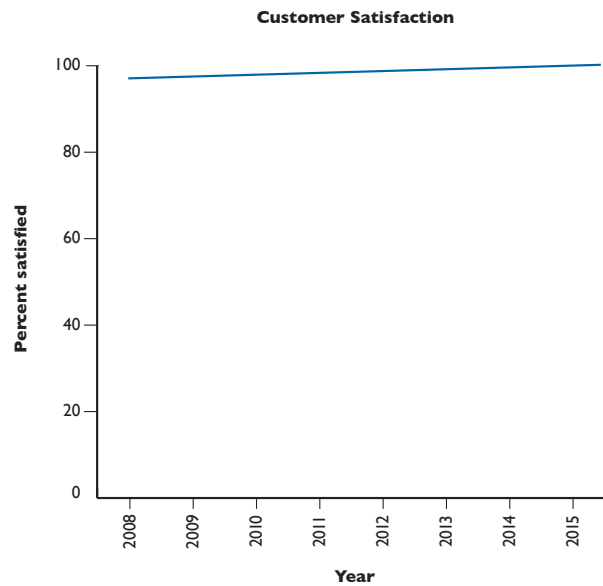
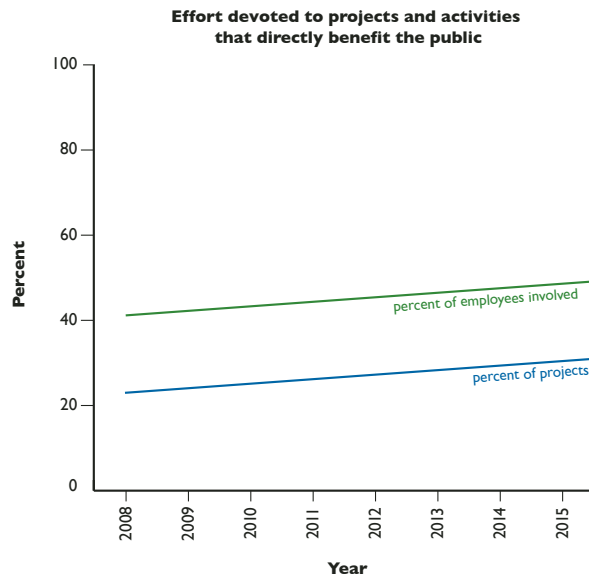
Specifically, the WSGS proposes to help modernize the Yellowstone Volcano Observatory (YVO) seismic grid (**see exception budget request**). The Yellowstone volcanic province is the most significant geologic hazard in Wyoming: volcanic activity in the Yellowstone area has the potential to catastrophically affect Wyoming and the northern hemisphere. Currently, the YVO is operating with substandard, 30-year-old technology. This proposal will result in greatly improved ability to detect, locate, and understand earthquakes and volcanic activity in northwest Wyoming, and would allow Wyoming to become an active partner in the YVO.

6. *Percentage of satisfied customers.* This metric will depict customer satisfaction. Since we ask customers to self-identify as industry, education, government, or general public, we can further explicate customer satisfaction based on affiliation. This will help us monitor how well we are serving different sectors. Additionally, we will now provide walk-in customers with satisfaction surveys in an effort to capture this important component of our clientele.

Additionally, the WSGS is making an **exception budget request** to upgrade and modernize the agency's IT infrastructure. This request pertains to all of the above metrics, goals, and projects. The agency's dependence on IT has increased exponentially over the previous biennium; without modernization of the IT department, the WSGS will face significant obstacles to the accomplishment of its goals.

**We have estimated our performance in the graphs below.**





## Story Behind the Performance

1. By applying geologic knowledge to researching issues associated with natural resources and energy development in Wyoming, the WSGS can ensure that state decision-makers base policy on the best science available. Responsible, informed development of state resources will optimize both economic prosperity and resource protection for Wyoming residents.
2. Collaborating closely with other agencies and organizations allows a dynamic, multi-disciplinary approach to problem-solving. This approach ensures that the challenges facing Wyoming will be addressed by teams of experts familiar with different aspects of an issue, and facilitates creative solutions.
3. By applying geologic knowledge to conventional energy development issues, the WSGS can facilitate responsible development of state resources.
4. By applying geologic knowledge to unconventional energy resources (shale gas, coalbed methane, deep gas, etc.) the WSGS can help the state develop new resources in a responsible manner and diversify its energy portfolio.
5. By taking steps to educate the public about geologic, natural resource, and energy issues, the WSGS can provide Wyoming residents with the information they need to make informed decisions about issues that affect them. Additionally, by working to improve understanding of geologic hazards and water issues in Wyoming, the WSGS can help protect residents from harm and maximize beneficial use of Wyoming's water resources.
6. Working to ensure WSGS customers are satisfied with the assistance and information they receive from the agency is a top priority. Measuring customer satisfaction allows us to monitor how well we are meeting the needs of the public, industry, educational institutions, and other government agencies.

## **Improving performance in 2009-2010**

Instead of focusing on ways to improve performance under our old performance metrics, we will use the new metrics proposed above to better describe our agency's true contribution to Wyoming and its residents. We will focus on improving performance under these new measures in the next biennium, after we have the chance to assess their efficacy.