

A National
**Geoscience Recovery and
Reinvestment Program**

Prepared by the
Association of American State Geologists

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www.stategeologists.org

Contents

Contact Information	2
Executive Summary	3
State Geological Surveys' supporting role in a national economic recovery and reinvestment program	5
Geoscience Recovery and Reinvestment Program proposals	7
AASG Endorsements	22
Acknowledgements	23

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Executive Summary

State Geological Surveys serve unique roles in bringing unbiased applied science to bear in support of major challenges facing this nation in water, energy, climate change, natural hazards, environment, and raw materials. The Association of American State Geologists (AASG) recognizes the obligations of the state surveys to provide essential support for meeting obligations of state-enabled components of these national priorities.

This past year, the 45 professional societies in the American Geological Institute prepared a report (*Critical Needs for the Twenty First Century: The Role of the Geosciences¹*) to make recommendations and guide policy decisions on topics in energy, climate change, water, natural hazards, raw materials, and other fields. AASG proposes to carry out these widely accepted priorities in support of infrastructure modernization and related activities in the national economic recovery and reinvestment program. Each of our projects stands alone, although their support functions mean that many of them build on and enhance activities in other projects.

National Priorities & Programs	Cost (\$million)	Jobs Created	Funding Authorization	Cognizant Federal Agency
Infrastructure Modernization				
Sample and Data and Access (critical for energy, climate change, materials development & other needs)	\$60	500	Energy Policy Act of 2005, Sec. 351: National Geological & Geophysical Data Preservation Program	Interior (USGS)
Geologic Mapping to Support Infrastructure Renewal, Natural Resource Management and Hazards Mitigation	\$32	160	National Geologic Mapping Reauthorization Act of 1999, Public Law 106-148, 43 U.S.C. 31a et. seq.	Interior (USGS)
Analytical and Infrastructure Technical Support	\$10	100	All programs	Interior (USGS)
Spatial Data Cyberinfrastructure (digital maps and data for multiple needs and applications)	\$25	150	Energy Policy Act of 2005, Sec. 351: National Geological & Geophysical Data Preservation Program (USGS);	Interior (USGS)
Water				
National Ground Water Monitoring Network Infrastructure and Aquifer Characterization and Development	\$110	250	SECURE Water Act Federal Advisory Committee on Water Information (ACWI), Subcommittee on Ground Water	Interior (USGS)
Energy/Climate Change				
Integrated Geological Carbon Sequestration Science Program	\$27	100	Energy Policy Act of 2005, Section 963, 42 U.S.C. 16293 Energy Independence and Security Act of 2007 (EISA), Title VII, Pub. L. No. 110-140 (2007)	Energy
National Energy Atlas of Geologically-hosted Resources	\$205	600		Energy, Interior

Digital Petroleum Atlas (also included as part of the National Energy Atlas, above)	\$85	300	Energy Policy Act of 2005	Energy
Digital Coal Atlas (also included as part of the National Energy Atlas, above)	\$85	300	Energy Policy Act of 2005, Sec. 437, Coal and Related Programs Inventory Requirement	Energy
Unconventional Natural Gas Assessment	\$52	400	Energy Policy Act of 2005, Sec. 999, Unconventional Natural Gas,	Energy
Fleet Modernization	\$6.25		Energy Independence and Security Act of 2007 (EISA), Title I – Energy Security through Improved Vehicle Economy	Energy
Natural Hazards				
Earthquake Network Expansion for Hazard Analysis and Response	\$22	100	Earthquake Hazards Reduction Act of 1977 (Public Law 95-124, 42 U.S.C. 7701 et. seq.), as amended by Public Law 108-360	Interior (USGS); Homeland Security (FEMA)
Landslide Hazard Mitigation	\$27	250	Public Law 106–113, National Landslide Hazards Mitigation Strategy	Interior (USGS); Homeland Security (FEMA)
Raw Materials				
Strategic & Critical Minerals Inventory and Assessment (critical for economic recovery and national security)	\$21	100	National Research Council, “Minerals, Critical Minerals, and the U.S. Economy” (2008) and “Managing Materials for a 21 st Century Military” (2008);	Defense; Interior (USGS)
Building Material Availabilities and Impacts (critical to infrastructure construction, renewal, and economic development)	\$25	200	National Research Council, “Minerals, Critical Minerals, and the U.S. Economy” (2008) and “Managing Materials for a 21 st Century Military” (2008);	Interior (USGS); Transportation (FHA);
<i>[note: the coal and petroleum atlases are subsets of the national energy atlas and are not added in the \$ total]</i>	Total: \$622.25 million	2,910	National Energy Policy Act of 2005, Sections, 357, 364, 437, 968, 979, and 999B	

¹AGI, 2008, Critical Needs for the Twenty First Century: The Role of the Geosciences, www.agiweb.org/gap/trans08.html

State Geological Surveys' Supporting Role in a National Economic Recovery and Reinvestment Program

“Yes, we’ll put people to work repairing crumbling roads, bridges and schools by eliminating the backlog of well-planned, worthy and needed infrastructure projects. But we’ll also do more to retrofit America for a global economy. [That] means investing in the science, research and technology that will lead to new medical breakthroughs, new discoveries and entire new industries.”

Barack Obama, January 8, 2009

The Association of American State Geologists (AASG) represents the state geologists and the state geological survey agencies of the 50 United States and Puerto Rico. The AASG has promoted and coordinated the activities of the state surveys for the nation’s benefit for over 100 years. Collectively, these agencies employ approximately 2,100 professional and support staff. The specific responsibilities of the state surveys differ from state to state, depending upon the enabling legislation and the traditions under which the survey evolved, and they are variously located predominantly within state government and universities in their respective states. Almost all, however, function as sources of scientific expertise and basic information for their state governments’ executive, legislative, and judicial branches, as well as for businesses and citizens, regarding natural resources, particularly nonfuel mineral resources, water resources, energy (for example, oil, gas, coal, and geothermal), the environment, and natural hazards, such as earthquakes and landslides. The state surveys focus on practical and applied geoscience in support of economic development, resource development and management, environmental protection and public safety, and work closely with Federal agencies, such as the United States Geological Survey (USGS), as well as other state and local governmental entities.

State geological surveys are staffed by geologists, geophysicists, hydrologists, engineers, GIS and spatial analysts, and other professionals that have extensive knowledge and expertise in the natural resources of their states and region. The technical capability that exists within the surveys is often unique within their respective state government, as they are staffed and equipped to provide services in resource assessment and characterization--most often accomplished by delineation and characterization of resources through surface and subsurface geologic mapping. The work of the state surveys has been fundamental to the development of resources in the United States, and has significantly contributed to the economic well-being and security of the nation.

Significant additional assessment and mapping work by the surveys will be critical in support of economic stimulus activities in areas such as nonfuel mineral availability to supply building materials for roads and bridges, schools, and other “bricks and mortar” projects (aggregates, cement, building stone and brick, etc.); the availability of adequate water supplies to support increased activity and development; site assessment and characterization for construction projects; and identification of alternative and traditional domestic energy resources (oil, natural gas, coal, and geothermal), carbon capture and storage, and other scientific pursuits that will supply the nation’s energy needs.

The state geological surveys have significant capacity to engage these and other activities that will directly benefit the goals and objectives of the nation's economic recovery efforts. Further, the work of the surveys will result in jobs and economic activity for drilling companies, geophysical exploration companies, remote sensing industries, analytical laboratories, computer and software companies, geologists, geochemists, hydrologists, cartographers, engineers, technical editors, graphic artists, printers and publishers, and college students.

The state geological surveys hold vast archival collections of data regarding natural resources, much of which was originally collected at great expense and effort by the private sector and government. These comprise geological and geophysical information in many forms, including rock and mineral specimens; data collected during the course of exploration for mineral and energy commodities and water resources; reports; maps; analyses; various electronic databases; and others. These data, generally available from no other source, are critical to the nation's economic development, expansion and infrastructure renewal. Further, much of this information will be fundamental to the developing technologies associated with the geological storage of carbon dioxide and the development of geothermal energy resources, both of which are viewed as integral to mitigation of greenhouse gas emissions associated with the burning of fossil fuels.

The critical need to provide for preservation of these important data was recognized in the *Energy Policy Act of 2005 (EPACT05)*, which established the *National Geological and Geophysical Data Preservation Program* as a partnership between the state geological surveys and the USGS. This program was envisioned to address everything from "bricks and mortar" needs such as the construction of data repositories, to cataloging existing data for inclusion and dissemination by cyberinfrastructure so these data can be discovered, accessed, and utilized. Current appropriations for the program have been far, far below the authorized funding level of \$30 million annually. However, the economic stimulus program provides an opportunity to adequately fund this important and widely supported program.

AASG members work closely with our sister state and federal agencies and recognized that the projects and programs being proposed as part of a national economic stimulus plan for infrastructure need the technical expertise, capabilities, and information provided by state geological surveys. In response, AASG has prepared the following list of ways that our members are prepared to support the national efforts to help ensure they are effective, efficient, and environmentally sound.

Berry H. (Nick) Tew, Jr., President
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Geoscience Recovery and Reinvestment Program

Project: National Ground Water Monitoring Network Infrastructure and Aquifer Characterization and Development

National Priority: Water, Infrastructure Modernization

Action: Install state ground water infrastructure including ground water level monitoring, aquifer characterization and assessment, development of ground water resources

Purpose: Implementation of a nationwide, long-term ground-water-quantity and -quality monitoring network that would provide information necessary for the planning, management, and development of ground-water supplies to meet current and future water needs, assist with water availability estimates, preserve ecosystem health, and assess the impact of climate change on this critical resource.

Cost: Average \$1 million per state per year for 2 years; \$10 million for USGS coordination

Budget Request: \$110 million

Funding mechanism: Appropriation to the Water Cooperative Program of the USGS with funding grants to the State Geological Surveys

Participating Agencies/Groups: **U.S. Geological Survey**, State Geological Surveys, state water agencies, water districts, and other appropriate water management agencies

Benefits: Improves national ground water availability and sustainability, and restores water resource infrastructure.

Jobs Created: 50 in well drilling/construction industry, 200 state and federal scientists and information technology specialists for network sample collection and management, database construction and management, and web access portal development

Purchases: \$60 million in steel, concrete, plastics, sealants and additives, fuels, and other associated costs; \$15 million in digital data loggers and transducers, \$25 million in staff, sample analysis, and equipment.

Environmental Aspects: accurate ground water monitoring provides control data for ambient water quality parameters, monitoring the introduction and migration of man-made chemicals; ambient water-level monitoring provides insight to changes in water availability related to climate change, low-flow characteristics of rivers and streams, more prudent use of surface water supplies

Readiness: Monitoring wells are routinely drilled throughout the U.S. and private industry is suited to begin drilling programs in short notice. The downturn in the housing industry has left many drilling contractors readily available for work. States can field staff immediately to within 90 days of receiving funds

Time Period: 2 years

Authorization/Endorsements:

“Investigating Groundwater Systems on Regional and National Scales,” National Research Council, 2000)

Geological Society of America Position Statement: Water Resources

http://www.geosociety.org/positions/Pos17_waterResources.pdf

Federal Advisory Committee on Water Information (ACWI), Subcommittee on Ground Water SECURE Water Act (S.2156)

Geoscience Recovery and Reinvestment Program

Project: Sample and Data Access

National Priorities: Infrastructure Modernization; Water; Natural Hazards; Raw Materials; Energy & Climate Change¹

Action: Fund the National Geological & Geophysical Data Preservation Program (USGS) at full authorization level for two years. Suspend the state matching fund requirement.

Purpose: To collect, preserve, and make available the samples and data collected in developing the nation's infrastructure, energy resources, and those critical to understanding carbon sequestration opportunities.

Cost: Authorized at \$30 million per year, federal share. State matching requirements are waived.

Budget Request: Two years = \$60 million principally for acquisition, outfitting, and remodeling of physical facilities.

Funding mechanism: Appropriation to the National Geological & Geophysical Data Preservation Program in the U.S. Geological Survey.

Participating Agencies/Groups: U.S. Geological Survey with grants to State Geological Surveys

Benefits: Documentation and samples will be preserved for future work on the new infrastructure and for possible remediation issues.

Jobs Created: 500 in construction

Purchases: \$50 million in buildings; \$10 million for shelving and equipment

Environmental Aspects: preserving samples reduces or eliminates needs to drill future holes, provides critical documentation for future response and mitigation efforts.

Readiness: The proposal is restricted to expanding existing repositories or acquiring facilities, and remodeling, building out, or outfitting them to accept the influx of new samples.

Time Period: Build-outs and remodeling can begin as soon as contracts can be let. Acquisitions can begin in 90 days after the funds are made available.

Authorization/Endorsements:

Energy Policy Act of 2005, Sec. 351: National Geological & Geophysical Data Preservation Program (USGS)

"Implementation Plan for the National Geological and Geophysical Data Preservation Program," USGS, 2006

National Geologic Mapping Act of 1992, National Geological Map Database (USGS)

"Geoscience Data and Collections: National Resources in Peril", National Research Council, 2002

Geoscience Recovery and Reinvestment Program

Project: Geologic Mapping to Support Infrastructure Renewal, Natural Resource Management and Hazards Mitigation

National Priorities: Infrastructure Modernization; Water; Natural Hazards; Raw Materials; Energy & Climate Change

Action: Fund the STATEMAP component of the National Cooperative Geologic Mapping Program at full authorization levels for 2 years.

Purpose: State geological surveys will map geology of areas where new infrastructure is developed or prepare derivative maps (hazard susceptibility, depth to bedrock, sand and gravel resources, pre-existing mine and quarry locations, etc), to help ensure cost effectiveness and safety of projects, and reduce or mitigate environmental impacts.

Cost: Authorized at \$16 million per year. State matching fund requirements are waived.

Budget Request: \$32 million over two years principally for staff salaries and operating costs.

Funding mechanism: Appropriation to the STATEMAP component of the National Cooperative Geologic Mapping Program in the U.S. Geological Survey.

Participating Agencies/Groups: U.S. Geological Survey with grants to State Geological Surveys.

Benefits: Better siting and development of projects, improved environmental mitigation.

Jobs Created: 160 geologists, field assistants, GIS technicians

Purchases: minor

Environmental Aspects: Identify environmental issues affecting infrastructure projects early to prevent, minimize, or mitigate their impacts.

Readiness: States can field staff within 30 – 90 days of receiving funds.

Time Period: 2 years, with as much as possible early in the process to improve infrastructure planning and implementation.

Authorization/Endorsements: National Geologic Mapping Reauthorization Act of 1999, Public Law 106-148, 43 U.S.C. 31a et. seq.

Geoscience Recovery and Reinvestment Program

Project: Strategic & Critical Minerals Inventory and Assessment

National Priorities: Raw Materials; Infrastructure Modernization

Action: Carry out a national assessment of the resource base for selected strategic and critical materials for the Nation's defense and economy security.

Purpose: Minerals are needed to build our infrastructure and many of the alternative and renewable energy technologies. We should demonstrate to the world that we are willing to develop our own resources in an environmentally sound way, rather than rely upon resources extracted in other countries, with lower environmental standards and enforcement. The carbon footprint of shipping foreign ores to the U.S. is also significant.

Cost: \$200K per state per year for two years (\$400K per state, on the average), plus \$500K per year for coordinating the overall effort (\$1.0M) for staff salaries to compile and evaluate data primarily from existing maps, reports, files, and databases into a national assessment.

Budget Request: \$21 million

Funding mechanism: Block grants to state geological surveys, through the U.S. Geological Survey.

Participating Agencies/Groups: Dept. of Defense, U.S. Geological Surveys, State Geological Surveys (Association of American State Geologists)

Benefits: This fulfills a critical national security need, while assisting in identifying and assessing resources to implement infrastructure development, "green" energy technologies, and defense industry

Jobs Created: 100 geologists, data entry technicians, GIS technicians

Purchases: minor

Environmental Aspects: Identify resource sites most suitable for development, while assessing environmental impacts for critical sites

Readiness: States can field staff immediately to within 90 days of receiving funds.

Time Period: 2 years

Authorization/Endorsements:

National Research Council, "Minerals, Critical Minerals, and the U.S. Economy" (2008)

National Research Council, "Managing Materials for a 21st Century Military" (2008)

Geological Society of America Position Statement: "The Role of Government in Energy and Mineral Resources" (2007)

http://www.geosociety.org/positions/pos11_GovInEnergy.pdf

Geoscience Recovery and Reinvestment Program

Project: Integrated Geological Carbon Sequestration Science Program

National Priority: Energy/Climate Change

Action: Carry out a national assessment of geological formations capable of sequestering carbon dioxide underground

Purpose: To support requirements for the U.S. Dept. of Interior to develop methodologies for assessing the national potential for geologic storage of CO₂, for determining the total capacity of ecosystems to sequester carbon and reduce greenhouse gas emissions through management practices, and for managing carbon dioxide sequestration on public lands.

To support Environmental Protection Agency (EPA) efforts to develop a scientifically sound regulatory framework enabling commercial-scale sequestration operations while safeguarding human health and underground sources of drinking water.

Cost: Fund an average of 2 scientific and technical staff members per state for 2 years at \$200K per state per year; oversight by NETL (\$1 million); incorporation of data by DOI (\$1 million per year) and EPA (\$1 million per year) and DOE (\$1 million per year) into their respective areas.

Budget Request: \$27 million

Funding mechanism: Grants to State Geological Surveys through the National Energy Technology Laboratory

Participating Agencies/Groups: State Geological Surveys, Dept. of Interior, Dept. of Energy, National Energy Technology Laboratory, Environmental Protection Agency

Benefits: Prompt provision of detailed, nationwide data for critical evaluation and decision-making requirements of federal agencies regarding climate change.

Jobs Created: 100 geologists, reservoir engineers, geochemists, and technicians

Purchases: minor

Environmental Aspects: Aids in reducing greenhouse gas emissions

Readiness: States can field staff immediately to within 90 days of receiving funds

Time Period: 2 years

Authorization/Endorsements:

Energy Policy Act of 2005, Section 963, 42 U.S.C. 16293

Energy Independence and Security Act of 2007 (EISA), Title VII, Pub. L. No. 110-140 (2007)

Geoscience Recovery and Reinvestment Program

Project: Spatial Data Cyberinfrastructure

National Priorities: Information Technology, Infrastructure Modernization; Water; Natural Hazards; Raw Materials; Energy & Climate Change, National Security

Action: Implement and populate a distributed, interoperable, online national geoscience information network

Purpose: To provide seamless Web-based access to 3,000+ databases and collections of state and federal geoscience information to support projects in infrastructure modernization, energy, water, hazards, climate change, and other spatially-defined activities.

Cost: \$5 million over 2 years for network development (comparable to the European Union investment for a comparable network); \$10 million for digital conversion of data and linkage of databases into the network among State Geological Surveys; \$15 million for similar activities at the USGS

Budget Request: \$25 million over 2 years

Funding mechanism: National Geological & Geophysical Data Preservation Program (U.S. Geological Survey)

Participating Agencies/Groups: Oversight by the USGS-AASG Geoscience Information Network Steering Committee

Benefits: A much more effective tool for decision support systems involving environmental-based issues; rapid development of a national system that will stay competitive with a similar and compatible European system; state-of-the technical system for research and development

Jobs Created: 150 in geoinformatics, information technology, data entry clerks, librarians

Purchases: Incidental software and computers

Environmental Aspects: Provides ready access to vast data resources that are difficult to discover and use but of critical value in environmental assessment and decision-making

Readiness: The network is currently under development. Surveys can put staff to work digitizing legacy data immediately or as fast as they can redirect existing employees or hire new staff

Time Period: 2 years

Authorization/Endorsements:

Energy Policy Act of 2005, Section 351

"Implementation Plan for the National Geological and Geophysical Data Preservation Program" USGS, 2006

"A Workshop on the Role of State Geological Surveys and U.S. Geological Survey in a Geological Information System for the Nation," Arizona Geological Survey OFR-08-1, 2008

"Geoscience Data and Collections: National Resources in Peril", National Research Council, 2002

Geoscience Recovery and Reinvestment Program

Project: Landslide Hazard Assessment

National Priorities: Natural Hazards, Infrastructure Modernization

Action: Carry out first-ever state-wide assessments of landslide hazards and areas susceptible to landslides and related Earth failure mechanisms

Purpose: Identify hazards and potential hazard areas that threaten communities, infrastructure, and those being developed or proposed for development.

Cost: Estimate \$250K average cost per state per year for two years, for field assessment and laboratory compilation work; incorporation into the national Landslide Hazards Program by the USGS, \$2 million.

Budget Request: \$27 million over 2 years

Funding mechanism: Block grants to State Geological Surveys via the U.S. Geological Survey Landslide Hazards Program

Participating Agencies/Groups: U.S. Geological Survey, State Geological Surveys, (Association of American State Geologists)

Benefits: One-time assessment that will reap huge cost-benefit returns by reduction of threats to lives, property, and infrastructure. Better planning will reduce costs by avoiding and mitigating landslide hazards.

Jobs Created: 250 geologists, geotechnical engineers, GIS analysts, technicians

Purchases: minor

Environmental Aspects: By identifying hazards before development, the environmental consequences can be greatly reduced or eliminated.

Readiness: Assessments can begin immediately - collating existing reports and known sites, following allocation of federal funds.

Time Period: 1 year

Authorization/Endorsements:

Disaster Relief Act of 1974, Section 202(a)

Congressional direction in 1999 to USGS to develop a comprehensive strategy to address the widespread landslide hazards facing the Nation in response to concern that landslide hazards were not being adequately addressed.

“Partnerships for Reducing Landslide Risk,” National Research Council, 2003.

“National Landslide Hazard Mitigation Strategy” USGS Circular 1244, 2003

Geoscience Recovery and Reinvestment Program

Project: Earthquake Network Expansion for Hazard Analysis and Response

National Priorities: Natural Hazards, Infrastructure Modernization

Action: Acquire USArray broadband seismic stations as they complete their EarthScope functions and leave them in place.

Purpose: Improve the nation's ability to detect, assess, mitigate, and respond to seismic hazards.

Cost: Purchase the 400 installed USArray stations @ \$20K; add \$5K @ per year for 2 years, maintenance and operation. Fund state and regional networks to manage the transfer and integration into state and regional networks, \$200K per state.

Budget Request: \$22 million

Funding mechanism: To the EarthScope program via Federal Emergency Management Agency (DHS) for instruments; to state and regional seismic networks via USGS Earthquake Hazards Program.

Participating Agencies/Groups: DHS-FEMA, EarthScope, State Geological Surveys, University Seismic Networks, U.S. Geological Survey Earthquake Hazard Program

Benefits: The USArray network is state-of-the art network, already permitted and installed.

Jobs Created: 50 geophysicists, geologists, and technicians; 50 indirect via equipment manufacturers

Purchases: \$8 million of broadband seismometers and related equipment

Environmental Aspects: Reducing environmental impacts of devastating earthquakes by more comprehensive and accurate forecasts and mitigation.

Readiness: Stations can be transferred today and sequentially as they are set for redeployment from the NSF-funded EarthScope project.

Time Period: 2 years

Authorization/Endorsements:

Earthquake Hazards Reduction Act of 1977 (Public Law 95-124, 42 U.S.C. 7701 et. seq.), as amended by Public Law 108-360

Geological Society of America Position Statement: Geoscience and Natural Hazards Policy http://www.geosociety.org/positions/pos6_natHazards.pdf

Geoscience Recovery and Reinvestment Program

Project: National Energy Atlas of Geologically-hosted Resources

National Priority: Energy/Climate Change

Action: Compile distributed, interoperable, georeferenced, comprehensive atlas of all energy sources available on a state by state basis. Include all geologically-hosted resources (natural gas, liquids, coal, coalbed methane, geothermal, hydrates).

Purpose: Provide an interactive, interoperable research and planning tool for national energy security, investment, and environmental impacts of energy resources that will be needed during the next 30 years of transition.

Cost: Costs will vary from modest for some states to \$5 million for big producing states; average \$3.5 million among all states over 2 years; Atlas development of \$10 million, and coordination, compilation, and data contribution efforts by DOE and DOI of \$10 million each.

Budget Request: \$205 million

Funding mechanism: Block grants to State Geological Surveys

Participating Agencies/Groups: State Geological Surveys, Energy, Interior

Benefits: The Atlas would be compatible with and linked into the national Geoscience Information Network run by USGS-AASG. This builds on long standing goals of DOE and prototype efforts funded in Kentucky, Kansas, Alaska and smaller efforts in other states.

Jobs Created: 600 geologists, GIS analysts, programmers, Web developers, technicians, administrative personnel

Purchases: Incidental software and computers

Environmental Aspects: Provides powerful tools for national energy planning and impact assessment

Readiness: States can engage staff immediately to within 90 days of receiving funds. Many of these data bases already exist, but are scattered in different areas, using different formats and

Time Period: 2 years

Authorization/Endorsements:

National Energy Policy Act of 2005, Sections, 357, 364, 437, 968, 979, and 999B

Geoscience Recovery and Reinvestment Program

Project: Digital Petroleum Atlas

National Priority: Energy/Climate Change

Action: Create an integrated online digital atlas of oil and natural gas resources for onshore and offshore U.S. (this project is part of the National Energy Atlas of Geologically-hosted Resources described above and broken out to be considered as a separate project)

Purpose: Provide an interactive, interoperable research and planning tool for national energy security, investment, and environmental impacts.

Cost: Costs will vary from near zero for some states to \$2 million for big producing states; average \$1.5 million among all states over 2 years; coordination, compilation, and data contribution efforts by DOE and DOI of \$5 million each.

Budget Request: \$85 million

Funding mechanism: Grants to State Geological Surveys via the US DOE Office of Fossil Energy

Participating Agencies/Groups: State Geological Surveys, U.S. Dept. of Energy, U.S. Dept. of Interior

Benefits: This builds on long standing goals of DOE and prototype efforts funded in Kentucky, Kansas, Alaska and smaller efforts in other states. The Atlas would be compatible with and linked into the national Geoscience Information Network run by USGS-AASG.

Jobs Created: 300 geologists, GIS analysts, programmers, Web developers, technicians, administrative personnel

Purchases: incidental software and computers

Environmental Aspects: Provides powerful tools to help manage and protect ecosystems in and around the nation's oil and gas fields and processing facilities

Readiness: States can engage staff immediately to within 90 days of receiving funds.

Time Period: 2 years

Authorization/Endorsements:

Geological Society of America Position Statement: "The Role of Government in Energy and Mineral Resources" (2007)

http://www.geosociety.org/positions/pos11_GovInEnergy.pdf

Geoscience Data and Collections: National Resources in Peril", National Research Council, 2002

Geoscience Recovery and Reinvestment Program

Project: Digital Coal Atlas

National Priority: Energy/Climate Change

Action: Create an integrated online digital atlas of coal resources for the nation (this project is part of the National Energy Atlas of Geologically-hosted Resources described above and broken out to be considered as a separate project)

Purpose: Provide an interactive, interoperable research and planning tool for national energy security, investment, and environmental impacts.

Cost: Costs will vary from near zero for some states to \$2 million for big producing states; average \$1.5 million among all states over 2 years; coordination, compilation, and data contribution efforts by DOE and DOI of \$5 million each.

Budget Request: \$85 million

Funding mechanism: Grants to State Geological Surveys via the US DOE Office of Fossil Energy

Participating Agencies/Groups: State Geological Surveys, U.S. Dept. of Energy, U.S. Dept. of Interior

Benefits: The Atlas would be compatible with and linked into the national Geoscience Information Network run by USGS-AASG.

Jobs Created: 300 geologists, GIS analysts, programmers, Web developers, technicians, administrative personnel

Purchases: incidental software and computers

Environmental Aspects: Provides powerful tools to help manage and protect ecosystems in and around the nation's coal fields

Readiness: States can engage staff immediately to within 90 days of receiving funds.

Time Period: 2 years

Authorization/Endorsements:

Energy Policy Act of 2005, Sec. 437, Coal and Related Programs Inventory Requirement

Geological Society of America Position Statement: "The Role of Government in Energy and Mineral Resources" (2007)

http://www.geosociety.org/positions/pos11_GovInEnergy.pdf

"Geoscience Data and Collections: National Resources in Peril", National Research Council, 2002

Geoscience Recovery and Reinvestment Program

Project: Unconventional Natural Gas Assessment

National Priority: Energy/Climate Change

Action: One-time state-wide assessments and compilations of unconventional natural gas resources

Purpose: Determine availability & development potential of unconventional natural gas resources of the nation to ensure a reliable supply of traditional fuels to meet America's needs while the country develops plans for alternatives and renewables to support infrastructure modernization

Increase the size of the technically recoverable unconventional gas resource base through new technology development and dissemination; convert technically recoverable unconventional gas resource to economically recoverable gas that can be harvested in an environmentally sound manner; develop technologies for improving unconventional resource recovery with minimum environmental impact.

Cost: \$500K per state per year for 2 years; \$2 million to compile at the national level (US DOE, RPSEA)

Budget Request: \$52 million

Funding mechanism: Block grants to State Geological Surveys via the Dept. of Energy

Participating Agencies/Groups: State Geological Surveys, U.S. Dept. of Energy

Benefits:

Jobs Created: 400 geologists, engineers, chemists, and technicians

Purchases: minor

Environmental Aspects: Increasing supply of less polluting fuel, minimizing environmental impacts of exploration and drilling

Readiness: Survey staff can be assigned immediately or new staff brought on within 30-60 days

Time Period: 2 years

Authorization/Endorsements:

Energy Policy Act of 2005, Sec. 999, Unconventional Natural Gas,

<http://fossil.energy.gov/epact/>

Research Partnership to Secure Energy for America (RPSEA), 2008 Annual Plan,

<http://www.rpsea.org/en/cms/361/>

Geological Society of America Position Statement: "The Role of Government in Energy and Mineral Resources" (2007)

http://www.geosociety.org/positions/pos11_GovInEnergy.pdf

Geoscience Recovery and Reinvestment Program

Project: Analytical and Infrastructure Technical Support

National Priorities: Infrastructure Modernization; Water; Natural Hazards; Raw Materials; Energy & Climate Change¹

Action: Acquire field and analytical equipment for State Geological Surveys to support infrastructure development, water/energy/raw materials resource assessments, natural hazards assessments, and environmental studies.

Purpose: One-time modernization of all states' technical capabilities to support infrastructure modernization, water, hazards, climate change, and energy programs across the range of state government projects

Cost: One-time block grants to State Geological Surveys @ \$200K.

Budget Request: \$10 million

Funding mechanism: Block grants to State Geological Surveys via the U.S. Geological Survey

Participating Agencies/Groups: Association of American State Geologists (AASG)

Benefits: States will acquire state-of-the-art capabilities to more effectively and efficiently investigate the geotechnical factors affecting the broad range of infrastructure projects.

Jobs Created: 100 indirect via equipment manufacturers

Purchases: \$10 million for equipment

Environmental Aspects: Help ensure that environmental impacts of new development are properly identified, documented and minimized.

Readiness: Most equipment is off-the-shelf and can be purchased upon receipt of funding.

Time Period: 6 months

Authorization/Endorsements:

This project supports all the other projects in the Geoscience Recovery & Reinvestment Program.

Geoscience Recovery and Reinvestment Program

Project: Building Materials Availabilities and Impacts

National Priorities: Infrastructure Modernization, Raw Materials

Action: One-time rapid state-wide assessments and compilations of non-fuel mineral resources

Purpose: Determine availability & development potential of minerals and raw materials to support infrastructure modernization

Cost: \$500K per state per year for 1 year; \$2 million to compile at the national level (USGS)

Budget Request: \$25 million for 1 year

Funding mechanism: Block grants to State Geological Surveys via the Federal Highway Administration.

Participating Agencies/Groups: State Geological Surveys, Federal Highway Administration (DOT), U.S. Geological Survey

Benefits: Early planning for raw materials can ensure adequate supplies to constrain construction costs, reduce transportation distances, and coordinate development to mitigate environmental impacts

Jobs Created: 200

Purchases: minor

Environmental Aspects: Identify optimum resource locales to minimize disturbances, transport distances

Readiness: Survey staff can be assigned immediately or new staff brought on within 30-60 days

Time Period: 1 year

Authorization/Endorsements:

National Research Council, "Minerals, Critical Minerals, and the U.S. Economy" (2008)

National Research Council, "Managing Materials for a 21st Century Military" (2008)

Geological Society of America Position Statement: "The Role of Government in Energy and Mineral Resources" (2007)

http://www.geosociety.org/positions/pos11_GovInEnergy.pdf

Geoscience Recovery and Reinvestment Program

Project: Fleet Modernization

National Priority: Energy/Climate Change

Action: Replace older, less efficient and more polluting vehicles, particularly field vehicles, with more fuel-efficient models.

Purpose: Reduce fuel consumption, reduce green house gases from vehicles, increase demand for American-made vehicles and especially alternative fuel and hybrid technologies.

Cost: Replace 250 vehicles nationwide at an average cost of \$25K per vehicle

Budget Request: \$6.25 million

Funding mechanism: Block grants from Dept. of Energy to State Geological Surveys or through state motor pools.

Participating Agencies/Groups: State Geological Surveys (although the concept can be expanded to all state agencies)

Benefits: Reduce fuel consumption, reduce green house gases from vehicles, increase demand for American-made vehicles and especially alternative fuel and hybrid technologies.

Jobs Created: Indirect jobs at American auto manufacturers and dealers

Purchases: 250 alternative fuel and hybrid vehicles

Environmental Aspects: Stated above

Readiness: Purchases can be made immediately

Time Period: 3 months

Authorization/Endorsements:

The vehicles will be used to support the other projects in this program.

AASG Endorsements

In addition to the specific programs laid out above, AASG endorses the following meritorious national programs:

USGS National Streamflow Information Program

AASG supports an increase of \$30 million per year to the USGS National Streamflow Information Program to reinstall stream gages to meet the critical need to better assess streamflows for monitoring water resources, climate-change impacts, and for reduction of risks from flooding hazards.

Ref: Streamgage Coalition; National Hydrologic Warning Council

USGS Cooperative Water Program

AASG supports an increase of \$100 million per year to the USGS Cooperative Water Program to restore the program back to 1:1 cost share with state and local entities.

Ref: Advisory Committee for Water Information

The National Map

AASG passed a formal resolution in 2001 endorsing the plan to revise the paper 7.5' topographic map with a digital database allowing for more rapid updates. This program has not had the funding necessary to implement a nationwide seamless map, at the same time we have had Katrina and now the infrastructure stimulus proposal, both of which would have benefited from such a uniform map coverage. It is crucial to geologic mapping. Ref: www.thenationalmap.gov It will include all of the NSDI layers, but two layers are crucial to starting:

National LIDAR Map (National Land Mapping/ The National Map)

AASG passed a formal resolution in June, 2008 endorsing the collecting of LIDAR for the entire nation as one of the most effective planning and monitoring tools that's come available. LIDAR data will contribute substantially to more effective mapping, assessment, evaluation, and mitigation efforts for all infrastructure, water, energy, and place-based climate change projects. This is the most important layer for geologic mapping.

Ref: Center for Lidar Information and Coordination (CLICK)
<http://lidar.cr.usgs.gov/>

Imagery for the Nation (IFTN)

AASG passed a formal resolution in 2006 endorsing the plan to a new nationwide aerial imagery program that will collect and disseminate standardized multi-resolution products on "set" schedules to provide annual 1-meter imagery over all states except Hawaii (3-year cycle) and Alaska. This program will also produce 1-foot resolution imagery once every three years for 50% of the land mass in all states except Alaska. It will offer the option for the states to buy-up any or all of the remaining 50%.

IFTN is useful to state geological surveys and many other agencies for carrying out our missions, quickly, effectively, and cost-efficiently.

Ref: National State Geographic Information Council
http://www.nsgic.org/hottopics/iftn_brochure_0308.pdf

Abandoned Mine Lands Clean-up

AASG endorses the proposal of the Interstate Mining Compact Commission and the National Association of Abandoned Mine Land Programs for \$250 million for closure and clean-up of priority hardrock abandoned mine land sites.

Ref: Testimony submitted to the U.S. Senate Committee on Energy and Natural Resources, Hearing on Clean Energy and Natural Resources Proposals To Stimulate the Economy and Create Green Jobs, December 10, 2008

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