



AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS
Geoscience & Energy Office – Washington, D.C.

Written testimony submitted to:
**Senate Appropriations Subcommittee on
Energy & Water Development Agencies**
in support of Department of Energy programs

by

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To the Chair and Members of the Subcommittee:

Thank you for this opportunity to provide testimony on the importance and need for strong federal R&D efforts in the fields of oil and natural gas, coal, and geothermal technologies. These activities reside in the U.S. Department of Energy's fossil energy program (oil, natural gas, coal) and energy efficiency and renewable energy program (geothermal). They are an essential investment in this nation's energy security.

The American Association of Petroleum Geologists (AAPG) is the world's largest scientific and professional geological association. The purpose of AAPG is to advance the science of geology, foster scientific research, and promote technology. AAPG has nearly 34,000 members around the world, with roughly two-thirds living and working in the United States. These are the professional geoscientists in industry, government, and academia who practice, regulate, and teach the science and process of finding and producing energy resources from the Earth.

AAPG strives to increase public awareness of the crucial role that geosciences, and particularly petroleum geology play in energy security and our society.

It is a widely accepted view that United States energy supplies will come from increasingly diverse sources over coming decades. New and alternative energy sources will supplement conventional energy sources to meet the nation's growing energy needs at affordable prices. Diversity in energy supplies enhances U.S. energy security by reducing our reliance on any single energy source.

Science and technology are necessary to ensure that this energy diversification occurs without economically damaging disruptions. This is very much in the public interest and a compelling reason why federal research and development (R&D) investment is needed.

What is frequently misunderstood, however, is that this R&D investment cannot be solely focused on new and alternative energy sources. Ensuring the uninterrupted availability of conventional energy, which provides the bulk of the nation's energy, also requires new scientific

insights and technological breakthroughs. That's an important point, because our nation is not facing a choice between conventional and alternative energy sources, although that is often how the energy debate is framed. Instead oil, natural gas, and coal currently supply 85% of the nation's energy. These resources are the foundation of our energy future. Upon this foundation we are now developing and deploying new and alternative energy sources.

Our nation's R&D policies must recognize the need to keep this foundation strong while simultaneously investing in the energy sources of the future.

Oil and natural gas technologies program

AAPG strongly urges the restoration of the DOE oil and natural gas technologies programs. They have been targeted for elimination by the previous and current Administrations, which is ironic considering oil and natural gas deliver 63% of our nation's energy.

Oil supplies the overwhelming volume of all transportation fuels. Natural gas heats homes and businesses, generates electricity, is a chemical feedstock, and has potential as a transportation fuel. Supplying the oil and natural gas consumed today and in the future requires significant technological advancements.

Several commonly overlooked trends in the oil and natural gas sectors support a federal role in oil and natural gas technologies R&D:

1. **The independent oil and gas producer is responsible for finding and producing most U.S. oil and natural gas resources.** According to the Independent Petroleum Association of America (IPAA), a trade association, independent producers produce 68% of the nation's oil, 85% of the nation's natural gas, and drill 90% of the nation's oil and natural gas wells. The median-sized independent producer is the epitome of American small business.
2. Independents typically work on projects that are too small for vertically-integrated "major" oil and gas companies to develop commercially. Technology is vitally important for locating these resources underground, but **these producers do not have the capacity to conduct independent research.**
3. **Increasingly domestic oil and natural gas production is coming from non-traditional (unconventional) resources,** such as the Barnett Shale of Texas or the Bakken formation of the Willison Basin. These resources play a vital role in building our nation's energy future, and their development requires significant R&D investment.
4. **Federal R&D has historically provided support for the nation's universities and colleges,** which have proven to be a rich source of technological innovation. But as federal support for oil and natural gas technology development has waned, so has the ability to conduct this type of research and train the next generation of U.S. scientists and engineers. There is a serious workforce shortage rapidly approaching both industry and government.

The goal of a robust federal R&D program in oil and natural gas technologies is to enable and encourage the environmentally-responsible development of the nation's petroleum resources on behalf of the American people. This includes conventional oil and natural gas, non-traditional

resources, and emerging resources, such as methane from methane hydrates, which according to a forthcoming study by the National Research Council “could help to provide greater energy security for the United States and to help address future energy needs globally.”

We request the Subcommittee on Energy & Water Development and Related Agencies appropriate \$100 million for oil and natural gas technology programs to be administered by the Department of Energy’s Office of Fossil Energy to support research projects that target increased production of domestic oil and natural gas resources.

Coal program

The nation’s coal resource is essential to U.S. energy security. AAPG supports research and development funding for coal, including clean coal technologies such as carbon capture and sequestration. ***AAPG supports the President’s budget request of \$404 million for these activities.***

Again, these investments must be balanced. In evaluating the DOE coal program, I urge you to review the findings of the National Academy’s report entitled Coal: Research and Development to Support National Energy Policy, released in June 2007. The study finds that while there are significant uncertainties in U.S. coal reserve and resource estimates, there is sufficient coal at current consumption to last for more than 100 years.

However, there is a real need for more “upstream” coal research to increase our understanding of the nation’s resource base. The study group observed that presently over 90% of federal R&D spending for coal is on the “downstream” side, focused on utilization, carbon capture and sequestration, and transport and transmission. Only 10% goes to resource and reserve assessment, mining and processing, environment/reclamation, and safety and health.

Geothermal energy technologies program

Geothermal energy is an important alternative energy resource that provides baseload power to the nation’s electrical grid. Significant expansion of geothermal power production may be possible through the development of enhanced or engineered geothermal systems, but developing and proving these technologies requires R&D investment.

AAPG supported the nearly \$400 million for geothermal energy R&D and deployment in the American Reinvestment and Recovery Act of 2009. ***AAPG supports the President’s budget request of \$55 million for the DOE geothermal program.***

Summary

Thank you for the opportunity to present this testimony to the Subcommittee. Our nation has the resources and capacity for a bright energy future. Ensuring this future requires prudent investment in R&D to deliver the science and technology needed to supply the conventional energy sources we will rely on in coming decades, and the breakthroughs in new and alternative energy sources that will power the future.

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