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 (DOE) fossil energy program (oil, natural gas, coal), and energy efficiency and renewable energy program (geothermal). In addition, a new crosscutting program for subsurface engineering integrates Office of Science activities with these applied research areas. This represents 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 over 40,000 members around the world, with nearly 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.

You are certainly aware of how oil and gas from shales has quickly boosted domestic energy production, creating well-paying jobs, stimulating manufacturing and enhancing U.S. energy security. This energy renaissance would not have been possible without fossil energy R&D, started in the 1970s at the DOE’s predecessor agency, the Energy Research and Development Administration (ERDA).

AAPG is disappointed to see the President’s budget request zeroes out funding for the methane hydrates program. Methane hydrates could well represent the next energy renaissance. Methane is the predominant component of natural gas. Hydrates below artic permafrost and in sediments of the Outer Continental Shelf hold vast quantities of this potential resource. The DOE fossil energy program began research on methane hydrates in 1997, when methane hydrates were only a scientific curiosity. Methane hydrates also play a significant role in the global carbon cycle and it is gaining recognition as an important component player in global climate processes

and climate change. It is critical, therefore that DOE continues to provide funding for this critical research area.

***AAPG supports FY 2016 funding of the DOE methane hydrates program in order to move this novel, potential energy source toward commercialization.***

What is frequently misunderstood, however, is that the federal energy R&D investment cannot be solely focused on new and alternative energy sources. Growing domestic production from shales, is resulting in on-going improvements in efficiency and environmental safety. But fully realizing the potential of these resources for the benefit of U.S. consumers requires additional scientific insights and technological breakthroughs. AAPG supports research proposed in the President’s budget to mitigate the impacts of oil and gas production from shales.

**Oil and natural gas technologies program**

Although AAPG applauds the increased funding in the President’s budget request for DOE’s natural gas technologies program, we oppose the zeroing out of the oil technologies program. In past budget requests these programs have regularly been either targeted for elimination or funded at levels insufficient to conduct necessary field experiments. This is ironic considering oil and natural gas deliver 62 percent of our nation’s energy. Consistent and sustained funding is important to maintaining U.S. research capability and advancing technologies in this area.

AAPG Supports DOE’s role in conducting priority collaborative research and development in conjunction with the Department of Interior and the Environmental Protection Agency to ensure that shale gas development is done in a sustainable manner. In particular, we support the development of technologies that focus on gaining a better understanding on the subsurface. AAPG is also supportive of the development of new technologies to mitigate methane emissions and to work with stakeholders on this important issue.

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 44 percent of the nation’s oil, 72 percent of the nation’s natural gas, and develop 90 percent of the nation’s oil and natural gas wells. The median-sized independent producer is the epitome of an American small business. Technology is vitally important for these **producers, who do not have the capacity to conduct independent research.**
2. **Increasingly domestic oil and natural gas production is coming from non-traditional (unconventional) resources**, such as the Marcellus Shale of Appalachia or the Bakken formation of the Williston Basin. The Monterey Shale of California is a new, huge but geologically unique resource that will require additional scientific study and new technologies to develop. These resources hold the key to American energy security, but their development requires significant R&D investment.
3. **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.
4. A robust federal R&D program in oil and natural gas technologies, according to a 2010 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.”

***AAPG requests that the Subcommittee on Energy & Water Development and Related Agencies increase funding for oil and natural gas technology programs in the Department of Energy’s Office of Fossil Energy in order to fund research supporting increased, environmentally responsible production of domestic oil and natural gas resources including methane hydrates, and the interagency unconventional oil and gas research program with EPA and USGS, including the cross-cutting Subsurface Technology and Engineering (SubTER) program.***

**Coal program**

AAPG supports research and development funding for clean coal technologies such as carbon capture and sequestration (CCS). This will aid power generators in reducing greenhouse gas emissions from coal-fired and natural gas power plants. Additional geologic and engineering research and large-scale field trials are also necessary to bring geologic storage and sequestration of CO2 to commerciality.

***AAPG supports the increased funding levels for Carbon Storage R&D in the President’s FY 2016 request.***

**Geothermal energy technologies program**

Geothermal energy is an important alternative energy resource that provides base-load 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. The Geothermal program will also be a major contributor to the SubTER crosscutting initiative.

***AAPG supports increased funding for the DOE geothermal program to support SubTER and the Frontier Observatory for Research in Geothermal Energy (FORGE) proposed in the President’s FY 2016 budget request.***

**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 safely and efficiently 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.

If you have any questions about AAPG or this testimony, please contact Edith Allison, the director of our policy office in Alexandria (phone: 202-643-6533, e-mail: eallison@aapg.org).