Statement by

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Regarding

S. 1013, the Department of Energy Carbon Capture and Sequestration Program Amendments Act of 2009

submitted to

The U.S. Senate

Committee on Energy and Natural Resources

Environmental Defense Fund (EDF) appreciates the opportunity to speak to you today as the Committee considers how to help early carbon capture and sequestration (CCS) projects conduct operations in a safe and effective manner and otherwise address risk management issues. Since 1967 EDF has linked science, economics and law to create

innovative, equitable and cost-effective solutions to urgent environmental problems. We believe that successful deployment of geologic sequestration is a critical path for accommodating coal, the world's most abundant but carbon-intensive fossil fuel, to a carbon-constrained future.

Climate change is the most critical environmental issue of our generation. The chief action the Senate can take to address this problem is to adopt cap and trade legislation, which would create a market value for avoiding carbon dioxide emissions, and a market mechanism for achieving these needed reductions at the lowest cost across the economy. The simple fact is that CCS has not been commercially deployed because there is currently no commercial reason to deploy CCS. A cap on carbon will create the market for this technology.

As part of this national cap and trade legislation, EDF supports reasonable complementary measures to help accelerate CCS deployment. With 50 percent of our nation's electricity coming from coal, it is critical to have technologies that enable significant CO2 reductions from coal fired power plants.

Fortunately, as a technical matter, CCS is ready to begin deployment today. All of the necessary technologies exist. What is missing are the market drivers to cause companies to put the pieces together. With experience, costs will come down and project development more routine.

Geologic sequestration of carbon dioxide is feasible under the right conditions. It has been successfully demonstrated in a number of field projects, including several large projects. The IPCC Special Report on Carbon Capture and Storage concluded in 2005 that the fraction of CO2 retained in "appropriately selected and managed geological reservoirs" is likely to exceed 99% over 1000 years.

The IPCC also concluded that the local health, safety and environmental risks of CCS are comparable to the risk of current activities such as natural gas storage, enhanced oil recovery and deep underground storage of acid gas *if* there is "appropriate site selection based on available subsurface information, a monitoring programme to detect problems, a regulatory system and the appropriate use of remediation methods to stop or control CO2 releases if they arise." The IPCC and others have also noted that the risk of leakage will tend to decrease with time.

The fact that EDF supports the deployment of CCS does not mean that we are champions of coal. We are pleased that people increasingly recognize that energy efficiency and renewable energy should play a leading role in energy and climate policy. As indicated by McKinsey and Company's U.S. Greenhouse Gas Abatement Mapping Initiative, there are many efficiency and renewable energy strategies that are cost-effective and can be pursued even before CCS is deployed on a widespread basis. CCS is an important part of the solution, but it is only a part.

Summary of Comments on S. 1013

EDF applauds Chairman Bingaman and the co-sponsors of S. 1013 (Senators Barrasso, Dorgan, Tester, Bayh, Landrieu, Casey and Voinovich) for introducing this legislation. The bill has a number of strengths. We are pleased, for example, that the bill helps clarify the difference between two issues that are in fact are separate but are frequently confused: (1) the need for long-term site maintenance after sequestration sites are successfully closed; and (2) the need for project developers to manage the risk of liability for damages that result from their activities. The bill addresses both issues. It is a measured response to barriers faced by some early mover projects at a time when private sector insurance options are not fully developed. The bill helps project developers manage risk while guarding against "moral hazard." In other words, the bill provides coverage for losses while creating what in essence are "underwriting standards" -- provisions that will encourage project operators to operate responsibly and not cut corners. In this regard, and in other important respects that are detailed below, the bill's approach to risk management is similar to the insurance model that has developed over time in the private sector. Moreover, by establishing a program similar to models that exist in the marketplace and by restricting the program to a limited number of early projects, S. 1013 will encourage the development of market-based solutions to the emerging CCS industry's need to spread risk at a reasonable cost. In the long-run, we believe a market based solution for risk management should be our goal. This model is healthier for

taxpayers, parties who may suffer damages, and the industry itself than would be a system where firms routinely depend on the government to absolve them of the consequences of their actions.

We will continue to analyze this legislation and discuss the issues raised with other stakeholders. We look forward to the opportunity to continue working with members of the committee to make recommendations and suggest changes should the need arise.

Post-Closure Infrastructure Maintenance – An Appropriate Government Function

Properly closed sequestration sites will require stewardship for long time periods even though there is sound basis to believe that they present little risk. EDF supports the creation of a third-party entity, adequately funded by industry, to manage the maintenance of properly closed sequestration sites. Ultimately the function might be privatized, but it makes sense for the government to perform this role for early projects.

The bill extends DOE's post-closure stewardship obligations beyond simple infrastructure maintenance (plugging the occasional leaking well, conducting a low-intensity monitoring regime, etc.) to include "remediation activities to ensure the geological integrity of the site and prevent any endangerment of public safety." Given the nature of the program established by S. 1013 (one in which the government will

indemnify eligible sites for damages that do not arise from gross negligence or intentional conduct), we believe this broad definition of stewardship is appropriate.

When long-term stewardship policies are crafted for future projects, however, we recommend that Congress re-consider the scope of any third-party stewardship program. Creation of a third-party entity for site maintenance is probably appropriate for both early projects and later projects, but the optimum funding method and/or duties of the stewardship entity are likely to be different once the marketplace has had time to develop robust insurance offerings and other risk mitigation tools. In the future it may be desirable to charge fees for long-term stewardship that differ based on a given operator's track record. Even where closed sites are concerned, it may not be desirable for all industry participants to pay for expensive remediation projects (as distinct from routine site infrastructure maintenance) where the problem is due to a single operator and statutes of limitation have not yet expired.

A Measured Response to Risk Management

By limiting the number of projects eligible for the indemnity program, by basing fees for participation on the estimated risks relating to particular indemnification agreements, and by providing that projects are not eligible at all unless they meet certain criteria, the bill constitutes a measured response to an identified problem – the barriers that some early-

stage CCS projects face due to the lack of fully-developed financial risk management tools in the marketplace.

Many people appear to take it as a forgone conclusion that indemnification or "liability relief" must be a permanent feature of the legal system governing carbon capture and sequestration. EDF is not convinced that any "liability relief" will be needed for the industry in the long-run, although we do see some role for special rules and institutions for early projects.

There is no special "liability relief" for the enhanced oil recovery business or the underground injection of hazardous waste business. Natural gas storage operators are not shielded from liability. Firms in these industries face potential liability for their actions until normal statutes of limitation have run their course or the companies are relieved of liability through bankruptcy. Yet all three of these businesses inject material into geologic formations and appear to have little trouble attracting investment in the marketplace.

The emerging carbon capture and sequestration industry, on the other hand, has not had time to develop a robust approach to risk management regarding potential damages that might be caused by its actions. Banks and other sources of investment capital are still coming to terms with the nature of risk presented by CCS projects and with the steps that project operators can take to minimize risks. Private sector insurance products recently have become available for CCS projects, but it is not yet clear how well this

privately available insurance will meet the needs of developers. It is not yet clear how rapidly the insurance industry will be able to develop expanded offerings should additional offerings be necessary or how much competition there will be to provide this sort of coverage. We believe it is likely that additional insurers will enter this market, and perhaps that the CCS industry itself will develop mutual insurance arrangements, but these options are not yet in place.

In this context, we support appropriate efforts to resolve regulatory and risk management bottlenecks to technology deployment. Since we will need to learn by doing, protections for early movers make sense as the technology begins to be deployed – provided proper safeguards are in place. However, as the industry matures and needed risk management tools develop, we should reevaluate what roles government and private industry can and should play.

Minimizing "Moral Hazard" is Essential

To privatize economic benefits while socializing the associated risks is not a policy that is likely to yield efficient results or encourage workmanlike behavior. Current liability rules, grounded in common law and statutes, serve an important purpose – encouraging people to act as their fellow citizens, their investors and competitors, and policymakers expect them to act.

S. 1013 clearly was drafted with these principles in mind. Damages arising from gross negligence or willful misconduct are excluded from coverage. In order to be eligible for indemnification, projects must meet a number of standards that can be thought of as underwriting standards. One key requirement is that project selection must be based on detailed geological information, which is absolutely essential if CCS is to become a widespread technology worthy of significant government and industry investment. Other important requirements include the bill's rigorous criteria for determining whether a site qualifies for site closure and participation in the long-term stewardship program. It is one thing to for taxpayers to assume management for a well-executed sequestration project, and something else entirely to relieve the risk of liability from an operator who has created a project that presents significant risks.

S. 1013 Emulates the Private Sector Approach to Liability Risk Management and Sets the Stage for a Private Sector Solution in the Long-Term

The programs established by S. 1013 would function much like private insurance and other financial market instruments: developers are free to apply or not to apply; risk management assistance is based on a contract; the program has what I would call "underwriting standards" designed to minimize risk; there are exclusions that ensure that the risks of certain types of damages are borne by the operator alone; risk is pooled and participants pay a fees commensurate with the risk profiles of their projects. (It is important to note, however, that fees based on discounting future costs to present values

will *not* be commensurate with the risk if the fees are deposited into the Treasury as miscellaneous receipts, as is proposed by S. 1013 in its current form, rather than being invested in order to grow at a rate equal to the discount rate used to calculate the present value).

By establishing programs similar to risk management models that exist in the marketplace and by restricting the programs to a limited number of early projects, S. 1013 should encourage the development of market-based solutions to the emerging CCS industry's need to spread risk at a reasonable cost.

Assisting State Regulatory Agencies

EDF is pleased that the bill establishes grants to state agencies for employee training purposes. CCS projects raise a number of new regulatory issues and federal assistance in helping to educate state agencies regarding these issues is important. Although this particular bill may not be the right vehicle, we encourage Congress also to go beyond training assistance and provide more financial assistance than is being provided currently for state permitting and enforcement activity. The Ground Water Protection Council has estimated that implementation of CCS rules under the Underground Injection Control program it will increase state regulatory costs by several tens of millions of dollars per year.

Conclusion

In conclusion, I would again like to commend the Chairman and the co-sponsors for bringing this measure forward. It is sound approach to an important policy challenge. We look forward to continuing to work with you on this matter in the future.