

U.S. Climate Change Technology Program – Technology Options for the Near and Long Term

Under the leadership of President Bush, the United States is now embarked on a long-term technical challenge – guided and paced by science, and undertaken in partnership with others – to explore, develop, and deploy innovative and advanced technologies that could make a significant contribution to meeting climate change goals. The President directed relevant agencies of the Federal government to apply their resources to this challenge and established a new Cabinet-level management structure to guide and oversee the effort. Under the auspices of this Cabinet-level management structure, the U.S. Climate Change Technology Program (CCTP) is charged with coordinating and focusing these research, development, and deployment activities among the participating agencies.

This report, titled *U.S. Climate Change Technology Program – Technology Options for the Near and Long Term*, presents summary descriptions, or profiles, of technologies or technology areas believed to offer significant potential for contributing to the president's near- and long-term climate change goals. This collection is fairly complete and roughly represents the breadth of Federal R&D in climate change technology development and deployment. Federal investments are further augmented by those of states, local governments, the private sector, and governments abroad. To the extent possible, the CCTP seeks to leverage and coordinate the Federal investments with those of others.

In total, there is a robust portfolio of R&D now underway in the United States and worldwide. From these R&D investments, undertaken together, pragmatic technological opportunities will arise to fundamentally transform and dramatically improve our 21st century energy system, with significantly reduced greenhouse gases emissions as a result.

In this report, more than 80 technology options are identified. They are organized within a series of goals aimed at developing advanced technologies that, if successful, could enable: (i) reduced emissions from energy end use and infrastructure; (ii) reduced emissions from energy supply; (iii) the capture and sequestering of carbon dioxide (CO₂); (iv) reduced emissions of other greenhouse gases; and (v) enhanced capabilities to measure and monitor greenhouse gases emissions. To ease reading and cross-referencing, a standard format for the profiles was adopted (see inset).

Each technology represented here, if successful, could contribute significantly to one or more of the goals outlined above, resulting in climate change-related benefits as compared to a baseline without the technology. Specific estimates of these benefits, however, are uncertain and depend on a number of variables, including marketplace forces, advances in competing technologies, and other factors prevailing at the time. Most of the technologies described require additional R&D investments to improve performance and reduce costs, followed by significant private-sector investment to commercialize and widely diffuse the technologies into the marketplace. Accordingly, such benefits are acknowledged generally by inclusion in this report, but specific estimates are not presented in each profile.

Additional information about the technologies may be obtained by contacting the Federal agency and program office identified as responsible for the R&D or deployment activity. All profiles may be found electronically, in formats suitable for electronic transfer, at the Web site <http://www.climatetechnology.gov/>.

Standard Technology Profile Outline

- Technology Description
 - System Concepts
 - Representative Technologies
 - Technology Status/Applications
- Current Research, Development, and Demonstration
 - RD&D Goals
 - RD&D Challenges
 - RD&D Activities
- Recent Progress
- Commercialization and Deployment Activities