

PROGRAM facts

U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Clean Coal
Demonstrations

12/2006



CLEAN COAL POWER INITIATIVE (CCPI)

Overview

The CCPI, initiated by President Bush in 2002, is an innovative technology demonstration program that fosters more efficient clean coal technologies (CCT) for use in new and existing electric power generating facilities in the United States. Candidate technologies are demonstrated at sufficient scale to ensure proof-of-operation prior to commercialization. Technologies emerging from the program will help to meet environmental objectives for America embodied in the Clear Skies Initiative, Global Climate Change Initiative (GCCCI), FutureGen, and the Hydrogen Initiative. Early CCPI demonstrations emphasize technologies applicable to existing power plants, as well as new plant construction, including advanced coal-based power generation, efficiency, and environmental and economic improvements. Later demonstrations are expected to include advanced turbines, membranes, fuel cells, gasification processes, hydrogen production, carbon capture and control, and other advanced energy system technologies.

The CCPI, an industry/government cost-shared partnership, responds to the government's commitment to increase investment in CCT. Cost-shared partnerships leverage public/private investment, enhance teamwork, promote technology transfer, and provide the expertise and funding needed to ensure successful development and deployment of new technologies. Priorities include increasing the domestic energy supply, protecting the environment, ensuring a comprehensive energy delivery system, and enhancing national energy security. The CCPI provides an important platform to respond to these priorities.

The CCPI, planned as a multi-year program, is driven by private-sector-proposed projects in response to a government solicitation. Potential applicants include technology developers, service corporations, R&D firms, energy producers, software developers, academia, and other interested parties. The private sector cost share must be at least 50 percent. Funding is awarded to applicants, selected as a result of these open competitions, who can rapidly move promising new concepts to a point where private-sector decisions on deployment can be made. The CCPI builds upon the advancements made by previous and continuing clean coal research and ensures the ongoing development of advanced systems for commercial power production. The program will help provide the nation with a reliable, affordable, secure, and sustainable energy supply, solving many of the environmental issues associated with coal use, while providing substantial environmental and economic benefits to the nation and the world.

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DOE Office of Fossil Energy is demonstrating advanced coal technologies that help achieve ...



The CCPI Mission is to:

- Create industry/government partnerships that develop promising, initially risky, advanced Clean Coal Technologies.
- Accelerate new coal energy systems into the market by conducting successful, full-scale technology demonstrations.
- Generate substantial economic and environmental benefits to ensure a secure energy future as coal-based technologies are commercialized by industry.

Planning and Management

The CCPI is managed by the Office of Fossil Energy (FE) and implemented by the National Energy Technology Laboratory's (NETL) Strategic Center for Coal. To ensure programmatic success, stakeholder input is routinely sought through workshops and strategy meetings. These events form an integral part of overall planning providing ample opportunities for stakeholders to communicate with the federal government. Planning input is provided by industry; environmental and state organizations; technology proposers, hosts, and project and technology developers; universities; interested state and federal organizations; and other interested parties.

Program Importance

The government's investment in CCPI recognizes that crucial benefits to our nation's economic stability and security can be achieved through clean coal research. The program, providing opportunity for promising technologies emerging from the FE core R&D program, is a critical strategy for overcoming risk barriers to commercialization. Successful outcomes of the CCPI program provide an important part of the technology needed to supply our energy needs. Over the last 20 years, our Nation has seen a correlation between economic growth and increasing electricity production. Success of the CCPI program will provide an important part of the technology needed to supply our immediate and long-term energy needs in support of our economic well being, while improving our environment. When the CCPI concept was introduced in 2001/2002, the U.S. power industry was heavily focused on gas-fired generation growth. Nevertheless, coal-fired units were forecast to provide a significant amount of incremental power generation through 2020. In today's energy forecast, due to evolving perspectives of fuel availability, coal-fired generation is expected to play an even greater role in the Nation's incremental power generation through 2025. This substantial increase in reliance on coal can only be achieved through longer and more efficient operation of existing coal-fired plants, incorporating new CCT in ongoing operations, and adding new clean-coal plant capacity. Today, CCT development programs are providing a valuable option to permit increasing use of our most abundant, indigenous energy source to meet the Nation's electricity and economic growth demands in an environmentally acceptable manner while reducing reliance on energy imports. By demonstrating the latest technology to improve efficiency and low-cost, high-performance emissions controls, CCPI technologies can help us to achieve a more secure energy future.

Program Direction

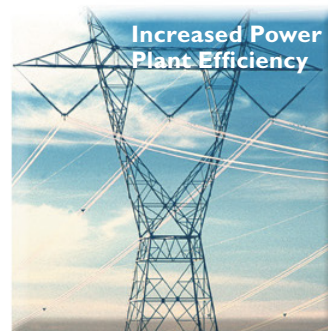
The CCPI fits within the FE, Office of Clean Coal, strategic plan to foster economic growth while protecting the environment and to support efficient and sustainable use of domestic energy resources. The program is closely linked with RD&D activities being conducted throughout the core R&D elements of the President's Coal Research Initiative that are driving towards ultra-clean, fossil-fuel-based energy complexes in the 21st century. FE's Clean Coal Technology Roadmap, developed cooperatively with the coal and power industry, addresses short- and long-term needs. When integrated with other DOE initiatives, the CCPI will help the nation successfully commercialize technologies that will attain near-zero emissions, produce clean fuels, and have CO₂ management capabilities. The President's GCCI commits the U.S. to reduce greenhouse gas (GHG) intensity (the ratio of greenhouse emissions to economic output) by 18 percent over the next decade. Improving power plant efficiency is a potentially significant way of reducing carbon emissions in the near and mid-term. CCPI technologies offer a pathway for reducing the GHG intensity of our economy.

Program Implementation

The CCPI is being implemented via successive solicitations (rounds) that target priority areas of interest to meet DOE's Roadmap goals. Demonstrations selected under these solicitations must address needs not met by the private sector, promote technologies that have not been proven commercially, have wide applicability to the existing power plant fleet, and provide substantial public benefit. Demonstrations must "raise the technology bar" over existing technologies in terms of efficiency, environmental performance, and cost to ensure that significant advances are achieved. Selection of CCPI Round 1 and Round 2 projects was completed in January 2003 and October 2004, respectively. Round 2 projects, when successfully completed and commercialized, will play an enabling role in the development of technologies to ensure future availability of clean, affordable, domestic electricity and hydrogen.

Benefits

The CCPI program benefits, when compared to RD&D investment costs, are expected to be substantial. The program, by merging public and private-sector interests, will benefit the environment, enhance electricity reliability, bolster energy security, and help to ensure an affordable supply of electricity. Successful completion of this initiative will lead to a stronger, more robust domestic economy. The outcome of the program will be new and innovative technologies that are readily accepted by industry and regulators and produce substantial public benefits. These include reduced fuel costs due to higher plant efficiencies, lower capital costs for repowered facilities and new plants, reduced costs of environmental compliance, avoided environmental costs (e.g., health, infrastructure, and agriculture), enhanced industrial competitiveness leading to increased domestic sales and technology exports, creation of high-quality jobs, and technology spin-offs.



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CUSTOMER SERVICE

1-800-553-7681

WEBSITE

www.netl.doe.gov

CCPI ROUND 1 PARTICIPANTS

Great River Energy
Underwood, ND
*Increasing Power Plant Efficiency—Lignite
Fuel Enhancement*

NeuCo, Inc.
Boston, MA
*Demonstration of Integrated Optimization
Software at the Baldwin Energy Complex*

University of Kentucky Research
Foundation
Lexington, KY
*Advanced Multi-Product Coal Utilization
By-Product Processing Plant*

WMPI PTY., LLC
Gilberton, PA,
*Gilberton Coal-to-Clean Fuels and Power
Co-Production Project*

Western Greenbrier Co-Generation,
LLC,
Lewisburg, WV
*Western Greenbrier Co-Production
Demonstration Project*

Wisconsin Electric Power Co.
Milwaukee, WI
*TOXECON Retrofit for Mercury and
Multi-Pollutant Control on Three 90 MW
Coal-Fired Boilers*

CCPI ROUND 2 PARTICIPANTS

Excelsior Energy, Inc.
Minnetonka, MN
Mesaba Energy Project

Pegasus Technologies, Incorporated
Chardon, OH
Mercury Specie and Multi-Pollutant Control

Southern Company Services
Birmingham, AL
*Demonstration of a 285-MW Coal-Based
Transport Gasifier*

For project details and benefits,
visit the NETL website
www.netl.doe.gov
Under "Technologies" select "Coal and Power
Systems," and then "Clean Coal Demonstrations."

For other Coal Power Program information,
visit the Office of Fossil Energy website
www.fe.doe.gov
or
the Strategic Center for Coal
on the NETL Website
www.netl.doe.gov
Under "Technologies" select
"Coal and Power Systems."

