



## Fact Sheet: Clean Coal Technology Ushers In New Era in Energy

*“Coal is by far the most abundant and affordable energy resource...so we’re developing clean coal technology.”*

-President Bush, May 24, 2006

**Today, Energy Secretary Samuel Bodman and Secretary of the Treasury Secretary Henry Paulson announced that \$1 billion in tax credits are being allocated to support the construction of nine clean coal and advanced gasification projects.**

The Bush Administration’s award of these tax credits is only one part of a comprehensive strategy to further promote the development, demonstration and deployment of emissions-free energy for the nation and, eventually, the world. Once we are successful in developing and commercializing these and other clean coal technologies, we will be able to slow, stabilize, and eventually reverse atmospheric trends caused by greenhouse gas emissions.

Section 1307 of the Energy Policy Act of 2005 (EPAAct) authorized \$1.65 billion in tax credits for clean coal projects:

- \$800 million of credits to support Integrated Gasification Combined Cycle (IGCC) projects for electricity generation. The credits in this category were to be allocated in relatively equal amounts among IGCC projects that use bituminous coal, sub-bituminous coal, and lignite;
- \$500 million to support advanced coal electricity generation projects that utilize innovative technologies other than IGCC; and
- \$350 million to gasification projects that support activities other than electricity generation such as the production of gases used in chemical production.

The advanced coal technologies being supported by these awards currently face cost, integration and reliability hurdles that must be overcome if they are to be widely deployed. DOE believes deployment incentives, such as tax credits, will accelerate the widespread use of these technologies and assist in driving down their overall cost.

\$1 billion in tax credits will be awarded today; the remaining \$650 million will be available in 2007.

### **Nine Planned Clean Coal Facilities Will Be Awarded \$1 Billion In Tax Credits.**

\*The names of the tax credit recipients are considered confidential taxpayer information. The following recipients chose to publicly acknowledge their award. Two recipients in the Gasification category chose not to have their awards announced.\*

<u>Technology</u>	<u>Recipient</u>	<u>Location</u>	<u>Output</u>	<u>Tax Credit</u>
IGCC Bituminous	Duke Energy – Edwardsport IGCC Project	Edwardsport, IN	795 MW	\$133.5 million
IGCC Bituminous	Tampa Electric	Polk County, FL	789 MW	\$133.5 million
IGCC Lignite	Mississippi Power Company	Kemper County, MS	700 MW	\$133 million
Advanced Coal	Duke Energy Cliffside Modernization Projects	Cleveland and Rutherford Counties, NC	1600 MW	\$125 million

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<u>Technology</u>	<u>Recipient</u>	<u>Location</u>	<u>Output</u>	<u>Tax Credit</u>
<u>Advanced Coal</u>	<u>E.ON U.S., Kentucky Utilities Co. and Louisville Gas and Electric</u>	<u>Bedford, KY</u>	<u>1744 MW</u>	<u>\$125 million</u>
<u>Gasification</u>	<u>Carson Hydrogen Power, LLC: Carson Hydrogen Power Project</u>	<u>Carson, CA</u>	<u>hydrogen and 390 MW of electricity</u>	<u>N/A</u>
<u>Gasification</u>	<u>TX Energy, LLC: Longview Gasification and Refueling Project</u>	<u>Longview, TX</u>	<u>synthetic gas for chemical feedstock</u>	<u>N/A</u>

**We Must Maximize The Benefits Of Our Domestic Coal Resources.**

**Coal Is, and Will Continue To Be, One of Our Nation’s Most Secure Energy Resources.**

Today, 50 percent of the electricity generated in the U.S. comes from coal. Total electricity demand is expected to grow by 39 percent by 2030, at which time, coal will account for 57 percent of our electricity generation. Coal is expected to remain the lowest-cost source of electricity for the foreseeable future.

The United States has more than 27 percent of the world’s coal reserves, 267 billion tons according to DOE’s Energy Information Administration. Last year we used a little more than 1 billion tons to generate electricity. Without it we would have had to import the energy equivalent of an additional 10 million barrels of oil a day or an additional 22 trillion cubic feet of natural gas to meet the same energy needs.

**The Bush Administration is Supporting Clean Coal Technologies Every Step of the Way, Making it Possible for Americans To Use Our Domestic Coal Resources In An Environmentally Sensitive Manner.** Since President Bush took office in 2001, we have spent or requested about \$2.2 billion to fund clean coal projects from the research and development phase to demonstration to wide-scale commercialization.

**Research and Development:**

- The Coal Research Initiative supports research at DOE’s National Energy Technology Laboratory that is helping to develop innovative pollution controls, gasification technologies, advanced combustion systems, turbines and carbon capture and storage technologies.

**Demonstration:**

- The Clean Coal Power Initiative creates industry/government partnerships to support the development of promising new advanced Clean Coal Technologies on a demonstration scale.
- DOE’s Carbon Sequestration Program is investing \$450 million over the next 10 years in 7 Regional Partnerships throughout the U.S. to validate the fact that the capture, transportation, injection, and long term storage of carbon dioxide (CO<sub>2</sub>) can be done safely, permanently, and economically.

**Commercialization:**

- Today’s tax credit awards promote the wide-scale commercialization of technologies that have been successfully demonstrated, but need support to be cost competitive with currently available technologies.

Each of these programs are contributing to our efforts to develop, demonstrate and deploy FutureGen, the first ever zero-emissions coal fired electric generation plant.

**Our Clean Coal Goal Is To Build on Progress That Has Already Been Made and Achieve Greater Efficiency, More Competitive Costs And Lower Emissions.**

- The efficiency of coal-based electricity generation plants has increased from about 5 percent in 1900 to around 35 percent today, meaning that we’ve increased the amount of energy we extract from coal by 700%.

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And while the most recent pulverized coal technology achieves above 40 percent efficiency, IGCC technologies should one day enable plants to reach 55 percent efficiency.

- Coal use increased by more than 30 percent while the average U.S. price of electricity declined by 20 percent after passage of the Clean Air Act of 1990.
- Improved coal technologies have helped reduce emissions: sulfur dioxide decreased 68 percent; nitrogen oxide decreased 46 percent over the last 30 years.

### **The Path Forward: A Roadmap For The Present And The Future**

**Today we have an aggressive strategy of early technology deployment and accelerated technology development that breaks the link between rising coal use and environmental concerns.** Our roadmap includes the following steps:

- (1) Retrofit existing power plants with clean coal technologies that eliminate nine-tenths of pollution and curb greenhouse gases by raising efficiency;
- (2) Begin commercial deployment of cleaner higher efficiency technologies as old plants are retired and new ones are built to meet rising demand; and
- (3) Accelerate research, development and demonstration of next-generation technologies that will lead to the operation in 2012 of FutureGen – the world’s first emissions-free coal plant.

**Step One: Complete the clean-up of existing plants by updating equipment and retrofitting.** We can slow the growth greenhouse gases by improving existing coal plants.

- Clean coal technologies available today for retrofit eliminate up to 95 percent of a plant’s sulfur dioxide and 90 percent of nitrogen oxides.
- First-ever mercury removal technologies are in demonstration.
- Technology can also raise the generating efficiencies of existing plants. Every 1 percent efficiency gain means about 2 percent less CO<sub>2</sub> per kilowatt hour.
- The National Coal Council estimates that raising the efficiency of existing plants can deliver the equivalent of more than 40,000 megawatts of new, cleaner, low-cost power.

**Step Two: Ensure that new plants have the best and most efficient equipment available.** Over the next 25 years we can expect to add at least 150,000 megawatts of new coal-based generating capacity. It is important to begin working the most advanced of present-day clean coal technologies into the mix as we add capacity, which is one purpose behind EAct’s incentives.

- Advanced technologies such as ultra-super-critical generation with pulverized coal and IGCC can virtually eliminate harmful pollution and will deliver generating efficiencies of up to 60 percent.
- \$1.65 billion in tax credits, of which we announced \$1 billion today, are being made available to companies that meet criteria outlined in EACT for the construction of Clean Coal and Advanced Gasification projects.
- EAct also authorized DOE to establish a loan guarantee program to support new or improved technologies that are good for the environment and our energy security. DOE has begun the process of soliciting proposals for up to \$2 billion in projects, but needs additional Congressional action to supply funds and ensure that DOE has appropriate legal authorities to proceed. We look forward to working with Congress to resolve those issues.
- DOE continues to support the development of carbon capture and sequestration technology that can be applied to future coal-fired power plants. In addition to the \$450 million dollars that was recently awarded to the Regional Partnerships to validate carbon capture, transportation and sequestration technologies, on October 23, Secretary Bodman announced a total of \$24 million to nine organizations to develop novel and cost-effective technologies to capture and then safely and permanently sequester carbon dioxide.

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**Step Three: Building and operating the first-ever virtually emissions-free coal power plant, FutureGen.** The \$1 billion FutureGen Project will integrate a range of technologies in to one plant for the first time. It will establish the technical and economic feasibility of carbon capture and safe, long-term geologic storage.

- FutureGen will deliver electric power at competitive prices, and it will be the prototype for new classes of ever-improving zero-emissions plants to follow.
- Four potential sites were chosen for FutureGen – two in Texas, two in Illinois. Final site selection will be made next year. Construction is expected to begin in 2009 and operations are planned for 2012.
- FutureGen will deliver commercial quantities of hydrogen at competitive costs for potential use in fuel cells that can begin eliminating CO<sub>2</sub> emissions in transportation.
- FutureGen will virtually eliminate the pollutants sulfur dioxide, nitrogen oxide and mercury. It will capture and store 90 percent of CO<sub>2</sub> initially and 100 percent eventually.

**The success of FutureGen will extend around the world.** The original FutureGen Industrial Alliance that will build and operate the plant has been joined by China's major power producer, a large United Kingdom mining company and the U.S. affiliate of Europe's largest power producer. India and South Korea are members of the government steering committee and have committed \$10 million each. China has announced its intention to join and other nations are showing interest.

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