Department of Energy Loan Guarantees: $8 Billion Allocated for Fossil Fuel Projects

The Department of Energy (DOE) Loan Guarantee Program was created in the Energy Policy Act of 2005 to provide Treasury-backed loan guarantees for selected energy projects. These include fossil fuel technologies such as coal-to-liquid, or converting coal into a liquid fuel through the Fischer Tropsch Process, and advanced coal gasification. Several companies are actively seeking these loan guarantees and currently being reviewed by the DOE loan guarantee office for final approval.

But because the Department of Energy loan guarantee program lacks basic taxpayer protections and has overall structural flaws, taxpayers stand to lose billions on risky projects. To date, the loan guarantee program has provided 30 conditional and final guarantees for renewable and energy efficiency, as well as one nuclear reactor and one uranium enrichment facility. DOE recently stated that two advanced fossil energy loan guarantees could be approved in 2012. Based on the current finalists, this would risk more than $4 billion in taxpayer funds.

The following is information on the advanced fossil energy technology portion of the DOE program and background on the projects that have applied to receive federal guarantees.

Background

Title XVII of the Energy Policy Act of 2005 authorized the Secretary of Energy to make loan guarantees for a variety of types of energy projects. While the program was intended for emerging energy technologies, mature industries like coal and nuclear are eligible as well. Congress provided the program with funding in several areas including advanced nuclear reactors, renewable and energy efficiency, front-end nuclear fuel cycle technology, and advanced fossil fuels.

Currently the DOE program has more than $8 billion in congressionally directed loan guarantee authority for advanced fossil energy technologies. This authority is divided into two areas. The Omnibus Appropriations Bill of 2008 allocated $6 billion for 'coal-based power generation and industrial gasification' and $2 billion for 'advanced coal gasification' (See Table 1 below).

Table 1: DOE Loan Authority for Advanced Fossil Energy Technology

Recipient Technology	*Current Allotment*
Coal-based Power Generation and Industrial Gasification[1]	$ 6,000,000,000
Advanced Coal Gasification	$ 2,000,000,000

[1] $6,000,000,000 of loan guarantees are for coal based power generation and industrial gasification activities at retrofitted and new facilities that incorporate carbon capture and sequestration or other beneficial uses of carbon.

DOE describes facilities eligible to receive funds as those projects that are not developing an already commercialized technology, are able to be reproduced, and are capable of being widely implemented in the U.S.[1] Technologies meeting these requirements include, but are not limited to, coal-to-liquid, petroleum coke-to-gas, integrated gasification combine cycle, coal-to-gas, and supercritical (coal-fired power plants whose power generation efficiency reaches 36 percent or greater and operates at a minimum of 3,200 lbs/in^2).

The loan guarantee authority has no expiration and has yet to be committed to any project. In 2008, DOE held a solicitation for fossil applicants. In response, eight companies applied including DKRW Advanced Fuels LLC, Christian County Generation LLC, Mississippi Gasification LLC, Indiana Gasification LLC, Baard Energy, TX Energy LLC, MEP-I LLC, and Mississippi Power Company. Since then, four companies have withdrawn.

Applicants

Eight companies applied for advanced fossil fuel loan guarantees[2] but only four remain in the queue. From 2007 to early 2009, Baard Energy pursued a loan guarantee worth $1.2 billion for its proposed $6 billion coal-to-liquid plant near Wellsville, Ohio. The plant aimed to produce 53,000 barrels of liquid coal per day while creating 250 MW of electricity. In March 2009, facing repeated project delays and cost increases, Baard Energy was forced to withdraw their application.[3] In December 2009, TX Energy, LLC (subsidiary of Eastman Chemical Company) announced the cancellation of its $1.6 billion Industrial Coal Gasification Facility and withdrawal from the DOE loan guarantee program.[4] Similarly, MEP-I, LLC (a subsidiary of Excelsior Energy) and Mississippi Power Company have pursued advanced fossil fuel loan guarantees in the past and have since withdrawn. Information about the remaining four companies can be found below. Table 2 provides a brief overview of the pending fossil fuel loan guarantees.

Table 2: Fossil Fuel Loan Guarantees

Project Title	*Technology*	*LG Amount (billions)*	*Location*
DKRW Medicine Bow CTL Facility	Coal-to-Liquid	$1.7	Medicine Bow, WY
Christian County Generation Industrial Gasification Facility	Integrated Gasification Combined Cycle (IGCC)	$2.6	Taylorville, IL
Mississippi Gasification Industrial Gasification Facility	Petroleum Coke-to-Liquid	$1.7	Moss Point, MS
Indiana Gasification Industrial Gasification Facility	Coal-to-Gas	$1.7	Rockport, IN

On top of high costs, construction delays, and technical problems, low natural gas prices have significantly impacted the viability of commercial fossil fuel-based power plants.[5] Half of the current fossil fuel loan guarantee applicants are projected to produce synthetic natural gas, i.e. syngas, from coal. But producing this syngas doesn't make economic sense when conventionally extracted natural gas is at record low prices.

Applicant: DKRW Medicine Bow Coal-to-Liquid Facility

Founded in 2002, DKRW Advanced Fuels, LLC is a hydrocarbon conversion company that is currently awaiting approval on a $1.7 billion Department of Energy loan guarantee. Based in Houston, Texas, DKRW will use the loan guarantee to build a large scale coal-to-liquid (CTL) plant in Medicine Bow, Wyoming.[6] The proposed 200 megawatt CTL plant aims to produce 10,600 barrels of liquid coal a day by processing more than 10,000 tons of coal into a variety of liquid fuel products, including gasoline and diesel fuel.[7] Now estimated at up to $2 billion, the plant in Medicine Bow plans to implement carbon capture and storage (CCS) technology to reduce greenhouse gases by at least 50% which would then be sold for enhanced oil recovery (EOR) processes nearby.[8,9]

Although little is known about the timing of the decision on the DKRW loan guarantee, DOE is currently completing an environmental impact statement (EIS) under the National Environmental Policy Act (NEPA) for the proposed CTL plant. Aside from a November 2009 'Notice of Intent' released by DOE to complete the EIS, no progress has been made public regarding the status of the $1.7 billion loan guarantee.

Despite the fact that over the years DKRW has signed contracts to sell the plants products, as well as signed license agreements for specialized technologies, the Medicine Bow plant is in its eighth year of delay. When first announced in 2004,[10] the project had purported a completion date of 2008.[11] However, preliminary construction on the project only began in November 2010 and DKRW now claims the CTL facility will not be online until 2015.[12,13]

Applicant: Christian County Generation Taylorville Energy Center

Headquartered near Taylorville, IL, Christian County Generation, LLC was—until recently—waiting to receive a $2.6 billion loan guarantee for its coal-fired integrated gasification combined-cycle (IGCC) power plant. Christian County Generation is a joint-venture company owned by Tenaska, Inc.—a power development company based in Omaha, Nebraska—and MDL Holding Company LCC, based in Louisville, Kentucky. The power plant was proposed as a state-of-the-art facility, exemplifying how coal is still a viable base load fuel source and a prime example of clean coal technology. However, in May 2012, Tenaska suspended plans for the coal-fired facility and unveiled modified plans to construct a 611 MW natural gas-fired combined cycle facility.[14] The new plan may disqualify Taylorsville from a receiving the $2.6 billion loan guarantee, however no official announcements have been made by DOE. As of July 2012, the $2.6 billion Taylorville Energy Center loan guarantee was still listed as '*schedule uncertain*' on the DOE website.[15]

Although Tenaska has shifted plans for the plant, they have not given up on coal gasification. The new natural gas-fired facility would also be capable of accepting synthetic natural gas in the future, if coal prices become competitive once again. Thus, the coal-fired portion of the facility has only been suspended. Tenaska states, "Should … conditions improve…, the second phase of the project incorporating coal gasification with carbon capture and storage could proceed."[16]

The initially proposed 700 MW power plant was slated to process more than 7,500 tons of coal per day and use carbon capture and sequestration (CCS) technology to reduce greenhouse gases by at least 65%.[17] Similar to the FutureGen project being developed in Morgan County, IL, the Taylorville Energy Center strived to be one of the largest 'clean coal' facilities in the United States.

Estimated at more than $3.5 billion, the Taylorville plant was also selected to receive $417 million in federal tax credits[2] through the American Recovery and Reinvestment Act of 2009 (ARRA).[18] Tax credits and loan guarantee combined, the coal-fired IGCC plant was set to receive nearly $3 billion in federal support—subsidizing more than 85% of the project. The new plant proposal is now estimated at one-third of the original cost.[19]

Initial construction for the coal-fired Taylorville Energy Center was projected to begin in mid-2011, however project delays and rising costs kept the facility from meeting that goal.

Applicant: Mississippi Gasification Industrial Gasification Facility

In December 2008, Mississippi Gasification LLC, a subsidiary of Leucadia National Corporation, applied to receive a $1.7 billion loan guarantee to finance the construction and startup of a large-scale petroleum coke gasification facility.[20] The proposed $2 billion gasification facility would convert more than 7,000 tons of petroleum coke into 120 million cubic feet of synthetic natural gas per day and be constructed near Moss Point, MS.[21] Petroleum coke is a byproduct of the petroleum refining process and behaves similarly to coal in the gasification process. Recently, the proposed project changed. In August 2012, Mississippi Gasification announced it intends to change the end product of its gasification facility to "gasoline, methanol, or both" due to continuing record low natural gas prices.[22]

Initial construction for the Mississippi gasification plant is set to begin in 2012, with total project completion by 2015.[23] However, low natural gas prices and technical design issues have delayed the final operational start date. In its 2009 annual report, Leucadia voiced concern on the long-term viability of the project stating "we still face the risk that long-term natural gas prices will remain too low to make the projects feasible."[24]

Mississippi Gasification LLC plans to partner with Denbury Resources and Leucadia Energy, LCC to capture up to 90% of the carbon emissions to be used for enhanced oil recovery (EOR) processes in nearby Heidelberg, Soso, and Eucutta oil fields.[25,26] To implement this technological addition, DOE announced the CCS portion of the project would be awarded $840,000 from the American Recovery and Reinvestment Act (ARRA) in 2009.[27] Further, the former Governor of Mississippi Haley Barbour awarded

[2] DOE awarded $417 million in tax credits to Tenaska Inc. after certifying that the plant could use CCS technology to capture at least 65% of carbon dioxide emissions.

$300 million in tax-exempt Gulf Opportunity Zone bonds to Mississippi Gasification LLC in 2008. Gulf Opportunity Zone bonds were established by the state of Alabama, Louisiana, and Mississippi after Hurricane Katrina to assist with economic recovery.

Though Mississippi Gasification LLC first applied for the loan guarantee in late 2008, little progress has been made on the project's construction. First, the plant requires an environmental impact statement (EIS). In November 2009, DOE released a 'Notice of Intent' to complete an EIS for the gasification facility but since then, no updates have been provided. The pending EIS is listed as '*schedule under development'* on the DOE website.[28]

Applicant: Indiana Gasification Industrial Gasification Facility

In 2006, Leucadia National Corporation started developing additional plans for a large-scale coal gasification facility near Rockport, Indiana. A subsidiary of Leucadia Corp., Indiana Gasification LLC applied to receive $1.7 billion in a DOE loan guarantee in March of 2009.[29] Intended to support the construction and startup of the facility, Leucadia is awaiting the completion of an environmental impact statement (EIS) by DOE which was expected to be released as early as June 2012.[30]

The proposed 300MW coal-to-gas plant would produce approximately 47 million mmBtu of substitute natural gas from more than 10,500 tons of coal per day.[31,32] In addition to the production of synthetic natural gas and electricity, the coal-to-gas plant intends to partner with Denbury Resources to capture upwards of 85% of emissions (roughly 5.5 million tons of liquefied CO_2), to be sold for enhanced oil recovery (EOR) processes.[33,34]

The Indiana Gasification LLC project has gone through a whirlwind of project delays, costs increases, and restructurings. Originally intended to be completed in 2011, the Indiana coal-to-gas plant was officially put on hold on by Indiana Gasification LLC in November 2008 after it failed to reach long-term above-average power to purchase agreements with local utility companies. To compensate for local utilities not willing to take the financial risk, the Governor of Indiana signed legislation in 2009 for the Indiana Finance Authority (IFA) to purchase the coal-to-gas plant's synthetic gas for a period of 30 years.[35] However, no new final project completion date has been given since. Similar to Leucadia's Mississippi Gasification plant, low natural gas prices and technical design issues could also delay the final commercial operation start date for the Indiana Gasification plant.

Since Leucadia first applied for its $1.7 billion loan guarantee, total project costs for the Indiana coal-to-gas facility have changed more than a half-dozen times. Project costs have ranged from $2 billion in June 2010[36] to $2.9 billion most recently in May 2012.[37] The final completion date for the coal-to-gas project is now 2015—four years behind schedule.[38]

On May 7th 2012, the Indiana Department of Environmental Management issued a final draft emissions permit. The permit now goes to EPA for federal review and is expected to be completed late this summer.[39]

Fossil Fuel Applicants Rely on Unproven Technology

The DOE loan guarantee program requires applicants to avoid, reduce, or sequester at least 50% of the carbon emissions that their plants will emit each year.[40] Carbon capture and storage (CCS), the technology that many of the advanced fossil energy loan guarantee applicants intend to implement to contain carbon emissions, is an unproven and highly expensive technology. CCS, also referred to as carbon capture and sequestration, is the process of separating carbon dioxide (CO_2) from fossil fuels, pumping it deep inside the earth, and leaving it stored in underground geologic formations. Another option is to sell the emissions after they are captured to local oil and gas companies to be used in enhanced oil recovery (EOR). This process involves the injection of CO_2 into previously exhausted oil and gas wells to increase recovery rates. In general, CCS is designed to be used with coal, coal-to-liquid, or natural gas plants to decrease overall carbon emissions.

While the oil and gas, and coal industry tout carbon capture and storage technology as an efficient way to reduce carbon emissions, CCS is not the cure-all solution that industry officials claim. In 2008, a Government Accountability Office (GAO) report stated that commercial CCS viability is and will continue to be barred by technological barriers. The report predicts that CCS commercial viability is 10 to 15 years away because the technology still faces "major challenges," including the enormous cost of installing and operating CCS systems.[41] Overall, the potential liabilities surrounding CCS technology would make any financier nervous, and private utilities have already avoided investment in CCS plants because of the unfeasible risk.

Taxpayer Risk

If two advanced fossil energy loan guarantees are approved this year, taxpayers will be forced to saddle up to $4.3 billion in risk. Federal taxpayers should not be asked to provide subsidies to these unproven and expensive technologies, especially to the well-established and highly profitable fossil fuel industry.

High costs, construction delays, and technical problems still plague the coal gasification, CTL, and CCS industries making it uncompetitive with other energy sources and an unattractive prospect for any investor—especially federal taxpayers facing trillion dollar deficits over the next decade. Putting the full faith and credit of the U.S. government behind these costly and risky projects is fiscally irresponsible.

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[1] *Department of Energy*. "Loan Guarantee Soliciation Announcement: Federal Loan Guarantees For Coal-Based Power Generation And Industrial Gasification Facilities That Incorporate Carbon Capture And Sequestration Or Other Beneficial Uses Of Carbon And For Advanced Coal Gasification Facilities." September 22, 2008. https://lpo.energy.gov/wp-content/uploads/2010/09/FE_Sol9_22_08.pdf

[2] Government Accountability Office. "Further Actions Are Needed to Improve Tracking and Review of Applications." March 12, 2012. http://www.gao.gov/products/GAO-12-157

[3] *Bard Energy*. "Baard Announces Ohio River Clean Feuls, LLC Pulls Out of Department of Energy Loan Guarantee Program." March 26, 2009. http://www.baardenergy.com/press/Baard%20Press%20Release%20Final%20March%2026,%202009.pdf

[4] Dan Wallach, "Eastman cancels plans for $1.6 billion Beaument plant." December 10, 2009. http://www.chron.com/business/energy/article/Eastman-cancels-plans-for-1-6-billion-Beaumont-1593182.php

[5] Matthew Wald, "With Natural Gas Plentiful and Cheap, Carbon Capture Projects Stumble." *New York Times.* May 18, 2012. http://www.nytimes.com/2012/05/19/business/energy-environment/low-natural-gas-prices-threaten-carbon-capture-projects.html?smid=tw-share

[6]*Department of Energy*."Loan Guarantee Solicitation Announcement." September 22, 2008. https://lpo.energy.gov/wp-content/uploads/2010/09/FE_Sol9_22_08.pdf
[7] Jeremy Fugleberg, "Coal plant cuts carbon dioxide deal in Wyoming." *Casper Star Tribune*. March 21, 2011. http://trib.com/news/state-and-regional/article_c1a3be48-4c77-5f1d-b41a-5b466b4b2cd2.html
[8] Jeremy Fugleberg, "Carbon County OKs $545M in bonds for Wyoming coal-to-gas plant." *Billings Gazette*. January 18, 2012. http://billingsgazette.com/news/state-and-regional/wyoming/carbon-county-oks-m-in-bonds-for-wyoming-coal-to/article_a8794712-4dba-5a49-b6d7-9657b0571a9d.html
[9]*Federal Register*.Vol. 74, No. 227. November 27, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/medbow-noi.pdf
[10]*Department of Energy*, "President's Clean Coal Initiative Attracts 'Second Wave' Technologies," July 26, 2004. http://fossil.energy.gov/news/techlines/2004/tl_ccpi_round2_proposals.html
[11] Jeremy Fugleberg, "Wyoming coal-to-gasoline plant 1 of only 2 under way in U.S." *Casper Star Tribune*. March 25, 2012. http://billingsgazette.com/news/state-and-regional/wyoming/wyoming-coal-to-gasoline-plant-of-only-under-way-in/article_458b0413-16d1-5024-9b35-b22108ded05a.html
[12] Jeremy Fugleberg, "Wyoming coal-to-gasoline plant 1 of only 2 under way in U.S." *Casper Star Tribune*. March 25, 2012. http://billingsgazette.com/news/state-and-regional/wyoming/wyoming-coal-to-gasoline-plant-of-only-under-way-in/article_458b0413-16d1-5024-9b35-b22108ded05a.html
[13] Ben Neary, "Wyoming asks national lab to review coal plant." *Associated Press*. December 20, 2011. http://www.boston.com/news/nation/articles/2011/12/20/wyoming_asks_national_lab_to_review_coal_plant/
[14]*Business Wire*. "Independent Analysis Finds Revised Taylorville Energy Center Plan Projected to Save Illinois Ratepayers $437.7." May 16, 2012. http://www.businesswire.com/news/home/20120516006627/en/Independent-Analysis-Finds-Revised-Taylorville-Energy-Center
[15]*Department of Energy*."Schedules of Key Environmental Impact Statements."July 2012. http://energy.gov/sites/prod/files/KeyEISSchedule_July2012.pdf
[16]*Business Wire*. "Independent Analysis Finds Revised Taylorville Energy Center Plan Projected to Save Illinois Ratepayers $437.7." May 16, 2012. http://www.businesswire.com/news/home/20120516006627/en/Independent-Analysis-Finds-Revised-Taylorville-Energy-Center
[17]*Federal Register*.Vol. 74, No. 195. October 9, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/NOI-Taylorville-EC.pdf
[18]*Taylorville Energy Center*. "Facility Cost Report." February 26, 2010. http://www.icc.illinois.gov/downloads/public/en/_Taylorville%20Energy%20Center%20Facility%20Cost%20Report%20FINAL%20022610.pdf
[19]Lindsay Morris, "Natural Gas and Coal Square Off."*Power Engineering*. July 12, 2012. http://www.power-eng.com/articles/print/volume-116/issue-7/features/natural-gas-coal-square-off.html
[20]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/mG-NOI.pdf
[21]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/mG-NOI.pdf
[22]April Havens, "Mississippi Gasification to pursue Moss Point plant to produce methanol, gasoline."*The Mississippi Press*. August 1, 2012. http://blog.gulflive.com/mississippi-press-news/2012/08/mississippi_gasification_to_pu.html
[23] April Havens, "SNG plants near reality; financing hinges on environmental impact studies (Outlook 2011)." *GulfLive.com.* April 25, 2011. http://blog.gulflive.com/mississippi-press-business/2011/04/sng_plant_nears_reality_financing_hinges_on_environmental_impact_studies_outlook_2011.html
[24]*Leucadia National Corporation*. "Annual Report." 2009. http://www.leucadia.com/10k_docs/luk_10k_2009.pdf
[25]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/mG-NOI.pdf
[26]*Department of Energy*. "Secretary Chu Announces First Awards from $1.4 Billion for Industrial Carbon Capture and Storage Projects." October 9, 2009. http://energy.gov/articles/secretary-chu-announces-first-awards-14-billion-industrial-carbon-capture-and-storage
[27]*Department of Energy*. "Secretary Chu Announces First Awards from $1.4 Billion for Industrial Carbon Capture and Storage Projects." October 9, 2009. http://energy.gov/articles/secretary-chu-announces-first-awards-14-billion-industrial-carbon-capture-and-storage
[28]*Department of Energy*."Schedules of Key Environmental Impact Statements." July 2012. http://energy.gov/sites/prod/files/KeyEISSchedule_July2012.pdf
[29]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/ig-noi.pdf
[30]*Department of Energy*."Schedules of Key Environmental Impact Statements." May 2012. http://energy.gov/sites/prod/files/KeyEISSchedule_May2012.pdf
[31]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/ig-noi.pdf
[32]*PR Newswire*. "Indiana Gasification Wins Air Permit for Clean Coal Facility, Says Plant a Big Win for Environment and Indiana's Energy Future." June 28, 2012. http://www.prnewswire.com/news-releases/indiana-gasification-wins-air-permit-for-clean-coal-facility-says-plant-a-big-win-for-environment-and-indianas-energy-future-160683585.html
[33]*Federal Register*.Vol. 74, No. 217. November 12, 2009. https://lpo.energy.gov/wp-content/uploads/2010/09/ig-noi.pdf
[34]*Indiana Department of Environmental Management*. "Notice of Decision: Approval – Effective Immediately." June 27, 2012. http://permits.air.idem.in.gov/30464f.pdf
[35] Kari Lyderson, "Indiana coal project proceeds, despite changing economics." *Midwest Energy News*. May 10, 2012. http://www.midwestenergynews.com/2012/05/10/indiana-coal-project-proceeds-despite-changing-economics/
[36] Peter Ambrose, "Work Kicks Off for State of Coal-Gas Plant in Southern Indiana." *Inc Now*. June 18, 2010. http://www.indianasnewscenter.com/news/local/25750814.html
[37] Eric Bradner, "Developers of coal-gasification plant proposed for Rockport, Ind., awaiting EPA permit." *Courier Press.com.*May 10, 2012. http://www.courierpress.com/news/2012/may/10/no-headline---ev_gasification/
[38]*The Associated Press*. "Regulators approve deal on Ind. Gasification plant." November 22, 2011. http://www.businessweek.com/ap/financialnews/D9R61ATO0.htm
[39]Eric Bradner, "Developers of coal-gasification plant proposed for Rockport, Ind., awaiting EPA permit." *Courier Press.com.*May 10, 2012. http://www.courierpress.com/news/2012/may/10/no-headline---ev_gasification/

[40] *Department of Energy*."Loan Guarantee Solicitation Announcement." September 22, 2008. https://lpo.energy.gov/wp-content/uploads/2010/09/FE_Sol9_22_08.pdf

[41] *Government Accountability Office*. "Opportunities Exist for DOE to Provide Better Information on the Maturity of Key Technologies to Reduce Carbon Dioxide Emission." June 2010. http://www.gao.gov/new.items/d10675.pdf