

# Gilberton Coal-to-Clean Fuels and Power Co-Production Project

## Participant

WMPI PTY., LLC

## Additional Team Members

Nexant, Inc. — engineering support

Shell Global Solutions B.V., U.S. — technology partner

SASOL Technology Ltd. — Fischer-Tropsch (FT) technology supplier

## Location

Gilberton, Schuylkill County, PA

## Technology

Shell oxygen-blown, entrained-bed gasifier and SASOL FT liquefaction technology

## Project Capacity/Production

4,700 tons/day of coal waste to produce 41 MW of power and 5,000 barrels/day of clean liquid transportation fuel

## Coal

Anthracite culm

## Project Funding

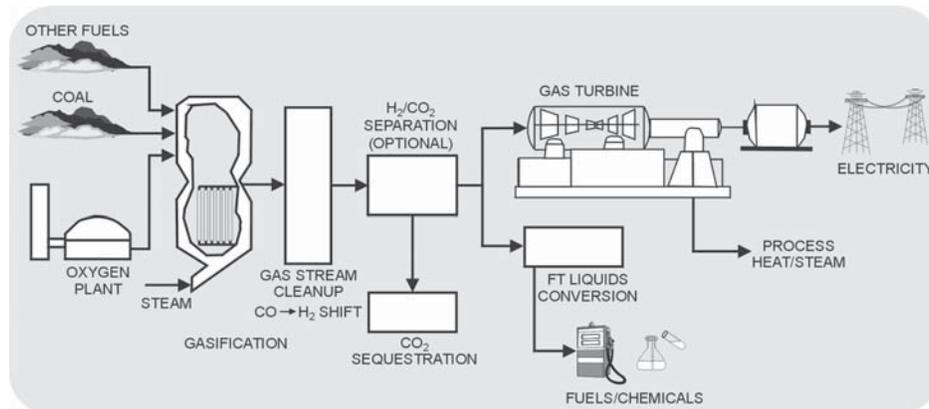
Total	\$1,062,882,038	100%
DOE	100,000,000	9.4
Participant	962,882,038	90.6

## CCPI-1

## Clean Coal Fuels

Upgrading

Conversion



## Objectives

To demonstrate gasification of 4,700 tons/day of coal waste to produce 41 MW of power and 5,000 barrels/day of clean liquid transportation fuel, including high-cetane diesel fuel and naphtha that contain no sulfur or aromatics.

## Technology/Project Description

The project will demonstrate conversion of 4,700 tons/day of coal waste from abandoned anthracite culm piles into 41 MW of electric power and over 5,000 barrels per day of ultra-clean transportation fuels. In doing so, over one million tons/year of coal waste will be removed that would otherwise contribute to contamination of watersheds through leaching of minerals and acid water formation. In the conversion process, coal waste is fed to a Shell oxygen-blown, entrained-bed gasifier that applies heat and pressure, transforms the ash constituent of the coal waste into an inert vitreous slag, and converts the hydrocarbon and sulfur constituents primarily into carbon monoxide (CO), hydrogen (H<sub>2</sub>), carbonyl sulfide (COS), and hydrogen sulfide (H<sub>2</sub>S). This raw synthesis gas is cleaned in a patented Rectisol™ process, which removes nearly all of the COS and H<sub>2</sub>S. Clean synthesis gas (CO and H<sub>2</sub>) is either shifted by the addition of steam to carbon dioxide (CO<sub>2</sub>) and H<sub>2</sub> for separation, or used directly for power generation and liquid fuel production. Power is generated in a gas turbine, which in turn provides process heat and steam for a SASOL slurry-phase Fischer-Tropsch (FT) reactor. The SASOL FT reactor produces high-cetane diesel fuel and naphtha that contain no sulfur or aromatics. Naphtha can either be upgraded to a high-octane, clean-burning reformulated gasoline or used as sulfur-free on-board reforming feed for fuel cell-powered vehicles.

<b>Project Duration</b> <i>TBD</i>	<b>Period of Operation</b> <i>TBD</i>	<b>Status/Schedule</b>  *Estimated date
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**Benefits**

This project addresses a long-standing environmental issue associated with vast abandoned coal waste piles while providing a sorely needed alternative source of high-grade, ultra-clean transportation fuels. Well over a billion tons of coal waste resides in Pennsylvania, Illinois, West Virginia, and Ohio. With successful demonstration of project technologies, coal waste that has threatened major watersheds may become low-cost feedstock to help fuel our nation’s transportation fleet and contribute to energy independence. This project will process about one million tons per year of coal waste materials from the Gilberton site. If successful, this technology could be applied in many regions of the country where coal wastes currently are stockpiled, and significantly reduce waste disposal activities from operating coal mines. The FT transportation fuels produced can be used for a variety of high-end fuel applications, and being virtually free of sulfur, nitrogen, and aromatics, are superior to their conventional petroleum counterparts in both end-use and environmental properties. Their characteristics translate into reduced sulfur, nitrogen oxides, particulate matter, hydrocarbon, and CO emissions. The process scheme is very flexible, allowing use of a broad range of feedstock (coal, coal waste, petroleum coke, biomass, and blends thereof), and facilitating carbon separation/capture for sequestration by keeping CO<sub>2</sub> streams concentrated. If successful, this project is of sufficient scale to reduce technical, business, and financial risks, clearing the way for subsequent applications.

**Status/Accomplishments**

This project was selected for award on January 8, 2003. Negotiations are proceeding toward award of a cooperative agreement. A Memorandum of Understanding was signed with SASOL to commence negotiations for the use of SASOL’s FT technology in the proposed project. On September 29, 2005, Pennsylvania Governor Ed Rendell announced that the state entered into an agreement to buy the fuel products from the project.

The Public Scoping Meeting for preparation of an Environmental Impact Statement (EIS) was held on May 5, 2003. Public hearings on the draft EIS were held on January 9, 2006, in Shenandoah, PA and on January 10, 2006, in Pottsville, PA.

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<b>S T A T U S</b>	<b>R e p o r t</b>	<i>Final Report Issued</i>	<i>TBD</i>
		<i>Draft Report Issued</i>	<i>TBD</i>
		<i>Operation Completed</i>	<i>TBD</i>
	<b>O p e r a t i o n</b>	<i>Operation</i>	<i>TBD</i>
	<b>C o n s t r u c t i o n</b>	<i>Construction</i>	<i>TBD</i>
	<b>D e s i g n</b>	<i>Award</i>	<i>TBD</i>
	<b>P r e A w a r d</b>	<i>Selection</i>	<i>1/03</i>