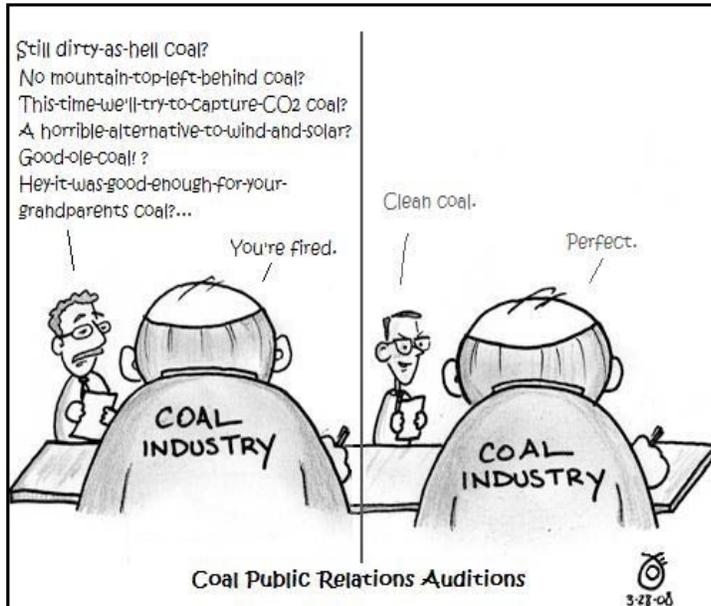


# THE REALITY OF THE “CLEAN COAL” CAMPAIGN

In this document, you can expect to find:

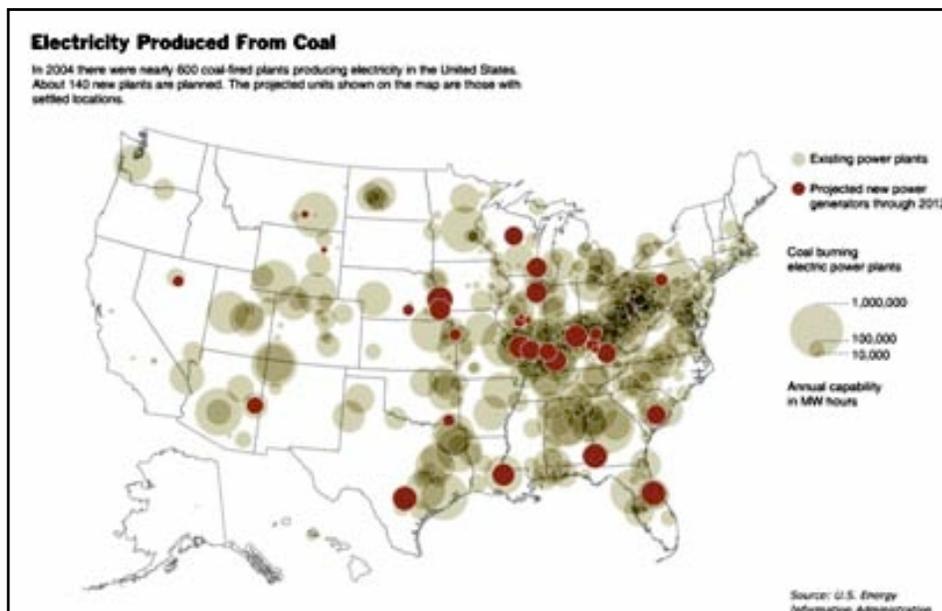
- Information about the public messaging and lobbying results of the coal industry’s \$40 million “clean coal” campaign;
- How the federal government has responded to the campaign and which coal industry-promoted projects are being funded by public tax dollars in Kentucky;
- And, detailed descriptions about why the three main industry-backed “clean coal” methods--carbon capture and storage technology, coal-to-liquid fuel conversion, and coal gasification--are unrealistic and expensive.

## THE REALITY OF THE “CLEAN COAL” CAMPAIGN



The coal industry has spent \$40 million on a public campaign to promote technologies that they claim will clean up coal.<sup>1</sup> Clean coal does not exist. Technology to capture more air pollutants from coal combustion exists, but most coal plants don't have those features and they are too expensive to add. The campaign has convinced Congress to commit billions of tax dollars towards these so-called “clean coal technologies” and has misled the public about just what “clean coal” really means.

Coal industry advocates are attempting to persuade Congress and the public that increasing coal production is the only viable solution to our energy crisis. Kentucky, as the third largest coal producing state is both politically and geographically at the center of the clean coal debate. Of the 150 power plants newly opened or proposed in 2006, 7 were located here. Two of these are slated to open soon.<sup>2</sup>

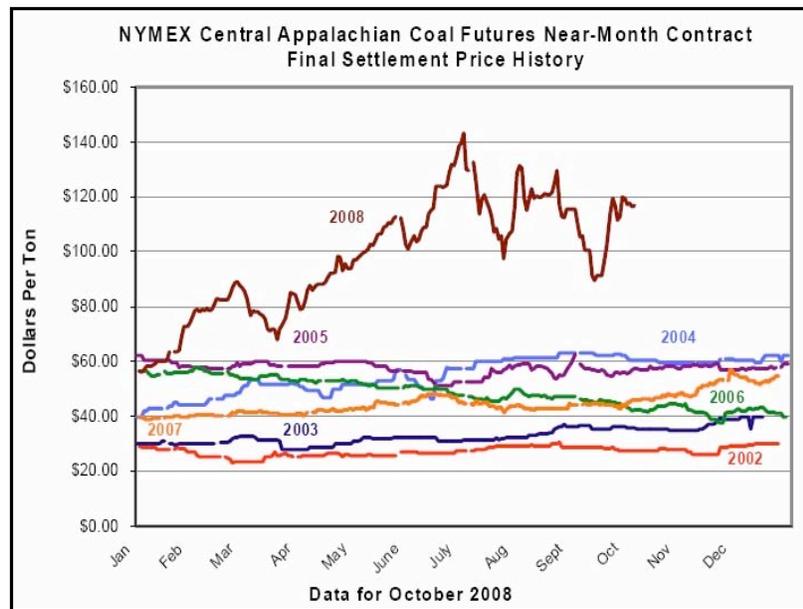


Red circles on the map are proposed power plants through 2012. Tan circles are power plants currently in operation. The size of the circles indicate a plant's operating capacity.<sup>3</sup>

The American Coalition for Clean Coal Electricity (also known as Americans for Balanced Energy Choices), in charge of the campaign, says that an increase in coal production is the best way to decrease dependence on foreign oil. Campaign representatives thus want to increase coal production through 2025.<sup>4</sup> They claim that the supposed “clean coal” methods will address the already disastrous coal-burning pollution problems that will only worsen with increased production--methods the industry is using public tax dollars to try and develop.

One of the industry’s claims is that a process called carbon capture and storage (CCS) will not only decrease coal’s pollution, but do so in a cost-effective manner.<sup>5</sup> The facts about CCS, however, tell quite a different story. CCS aims to remove carbon dioxide emissions from coal-burning power plants prior to release into the air. The technology has never been proven to work on an industrial scale, despite years of research and development. Further, Scientists project a 21-91% increase in the overall energy costs of new coal-burning plants equipped with CCS. Applying CCS to existing plants will be very expensive.<sup>6</sup> CCS is explained in more detail in a section below.

The 2008 price of coal has risen greatly compared to recent years. In all of the campaign advertisements, industry representatives fail to mention how much money the “clean coal” approach is earning them. They are funding much of the research and development with public dollars, want the public to assume the risk of any technological problems, and yet, they alone stand to benefit from increased coal use nationally.



Further, clean coal will be very costly to taxpayers in the long run—clean coal methods only move pollutants from one waste stream to another, doing little to mitigate the environmental effects of coal mining and its resulting impact on global warming.

## FEDERAL GOVERNMENT'S RESPONSE TO THE "CLEAN COAL" CAMPAIGN<sup>7</sup>

Since 2003, the Bush administration spent **\$2 billion** on a "Clean Coal Power Initiative," funding industry-based coal research and development projects. In 2008, the government committed **\$8 billion** in loans and **\$30 million in grants** to the industry for "clean coal" research, as well as \$188 million more to carbon capture and storage research. The \$15 million in DOE dollars granted to research institutes at U of K and WKU last year paid for activities already required of industries prior to closing a mining site, such as planting trees on and monitoring air pollution. At the state level, in 2007, the legislature authorized the availability of massive subsidies to companies planning build Coal-to-Liquid plants. Both the 2008 and the 2009 state budgets allocate \$4.5 million to "clean coal" research<sup>8</sup> and \$400,000 towards coal promotion.<sup>9</sup>

The methods supported with the money have not been tested in a large-scale manner, they will not be ready for use within 10-15 years and they have not proven to work to adequately reduce air pollution emissions. The millions of dollars invested in these efforts are being used for research and development in hopes that coal will be made cleaner in the future--not for cleaning up coal right now.

In partnership with the University of Kentucky, the following projects were granted funds:

- Attempt to develop a process to create an alternative fuel out of coal.
- Examine the feasibility of carbon nanotechnology, which scientists hope will be a mechanism to reduce emissions from coal production.
- Work towards developing a proposed Fuel Float technology to recover high-quality fuels and carbon products from power plant ash ponds and landfills.
- Attempt to develop C1-chemistry processes, which involved producing hydrogen from fossil fuels, in order to use the technology to make clean, high quality transportation fuel.
- Design, construct and operate a near commercial scale facility at the Ghent Power Plant in Ghent Kentucky, which will attempt to dispose of fly-ash coal by-products in an environmentally safe and friendly way.
- Obtain fundamental information necessary for the development and production of coal bed methane in the Illinois Basin.
- Demonstrate low compaction surface mine reclamation techniques for carbon sequestration through the production of high value trees.

And in partnership with Western Kentucky University, it is being used to:

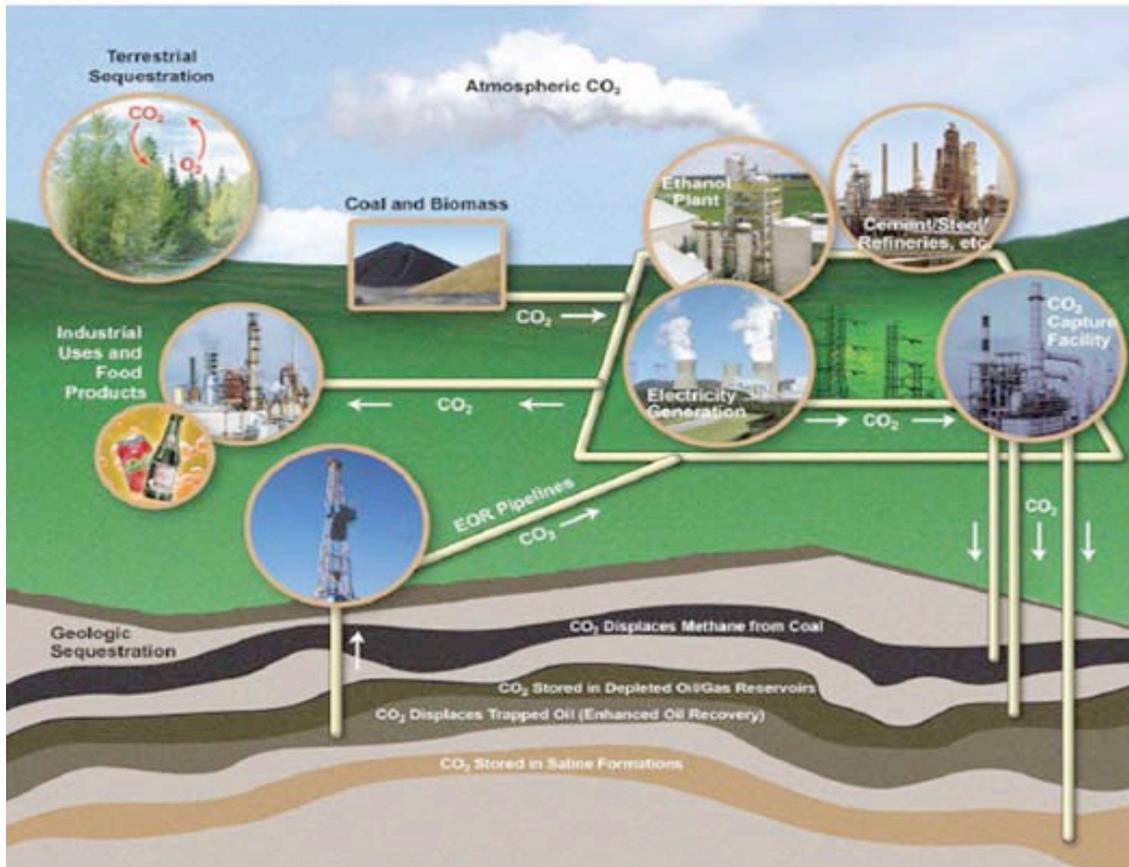
Establish an Environmental Control Technology Laboratory to analyze and monitor air pollutant emissions. The data gathered at this lab will be used to help inform scientists about how to reduce air pollution from coal combustion.

## THE TRUTH ABOUT "CLEAN COAL": CARBON CAPTURE AND STORAGE

Carbon capture and storage (CCS), also called carbon capture and sequestration, aims to capture carbon dioxide from sources such as coal-burning power plants, turn it into a non-harmful substance and store it instead of releasing it into the atmosphere. Although CO<sub>2</sub> has been injected into geological formations for different reasons in the past, the long-term feasibility and risks of CO<sub>2</sub> storage of this magnitude to humans and the ecosystem are unknown.

Carbon is naturally

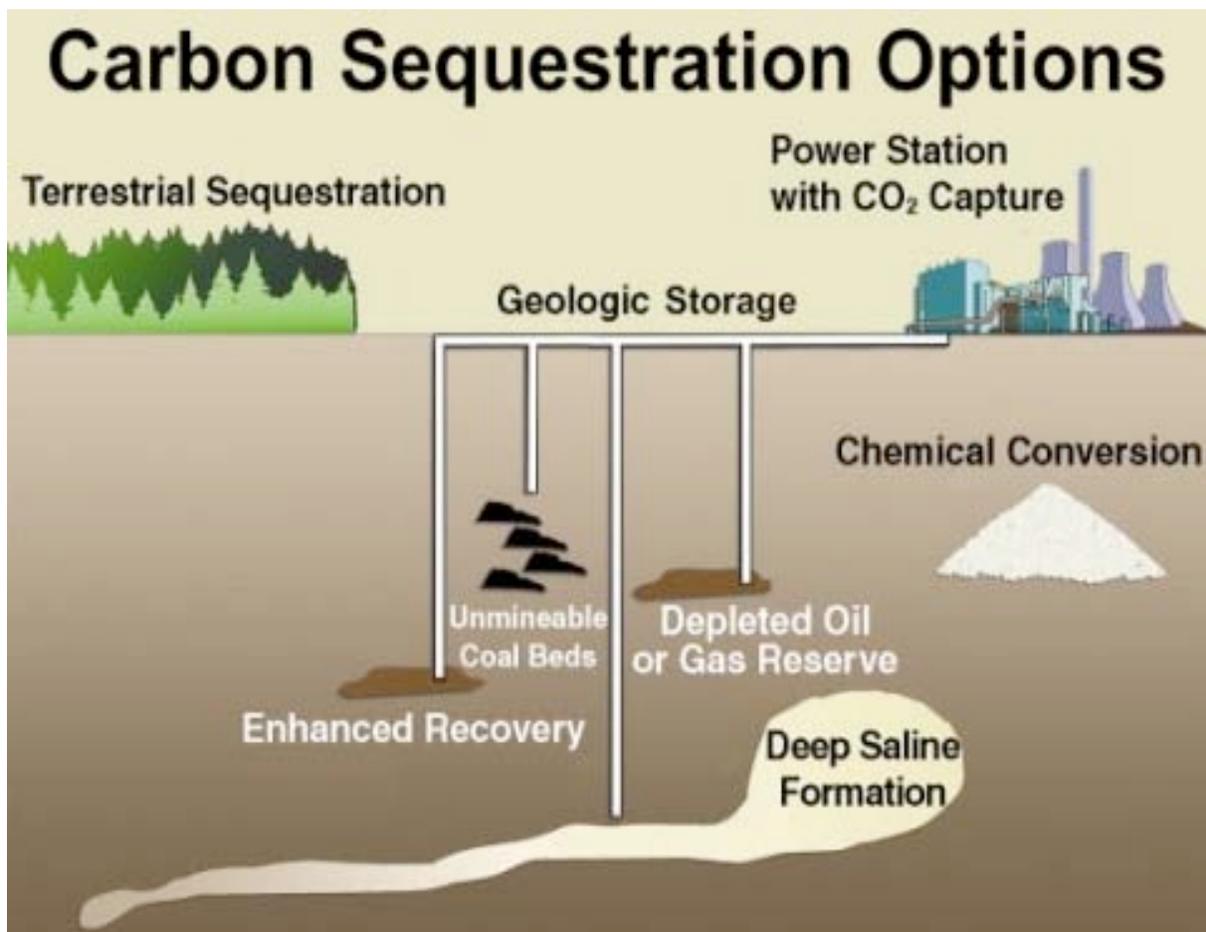
### The Carbon Capture and Storage Process:



removed from our air through a plant's photosynthesis cycle. Plants inhale CO<sub>2</sub> for energy and release oxygen back into the air. Unfortunately, increasing natural terrestrial sequestration (or capture by trees and plants) alone, by planting trees for example, cannot reverse human-made emissions in the amount needed.

CO<sub>2</sub> could also be stored in the ocean or underground in the form of carbon salts or carbon liquid. In the case of deep ocean storage, there is a risk of making the oceans more acidic. The oceans have already increased in acidity as a result of high human-made CO<sub>2</sub> in the atmosphere. The increased acid contents damages the delicate life and animal systems living in the ocean. The risks of storing carbon underground are unknown. Scientists estimate that this method could

mitigate between 10% and 55% of global carbon emissions, but only until year 2100 due to limited storage space.<sup>10</sup>



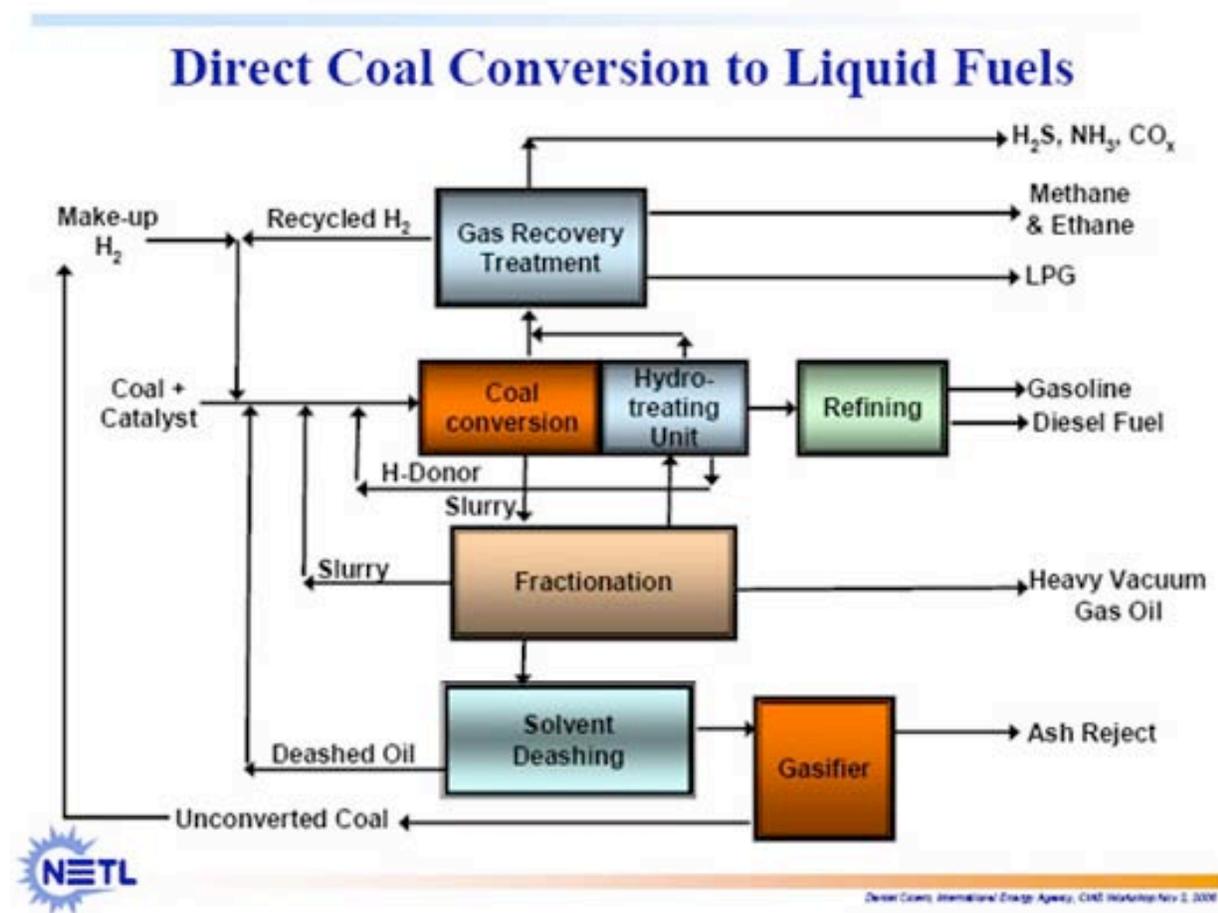
CCS technologies built into a new power plant could potentially reduce CO<sub>2</sub> emissions by approximately 80-90%. However, the process of capturing and storing the carbon would increase the fuel needs of such plants by 25%. These and other system costs are expected to increase the overall energy costs of new coal-burning plants equipped with CCS by 21-91%. Applying CCS to preexisting plants or plants far from a storage location will be even more expensive than this, elevating costs of operating such plants between 50-300%.<sup>11</sup> The sheer energy cost of such a proposal outweighs any benefit.

CCS is not slated to be used in the U.S. until 2030. Even knowing this, "Clean Coal" campaign representatives conveniently rely on the future hope of CCS to clean up coal's pollution and they therefore use it to argue that federal emission caps on carbon emissions today are unnecessary. By 2030, the worst impacts of global warming will be too late to prevent. CCS is an expensive stop-gap measure and does little to help Kentucky or its people work towards energy and economic independence.<sup>12</sup>

## THE TRUTH ABOUT “CLEAN COAL”: COAL-TO-LIQUID FUEL (CTL)

Coal to liquids is a term describing processes for converting coal into liquid fuels such as gasoline and diesel. Currently, the major CTL process (called the Fischer-Tropsch conversion) under study requires converting coal into gas and then the gas into liquid. Several processes that convert coal directly into liquids (called direct liquefaction) are also under development.

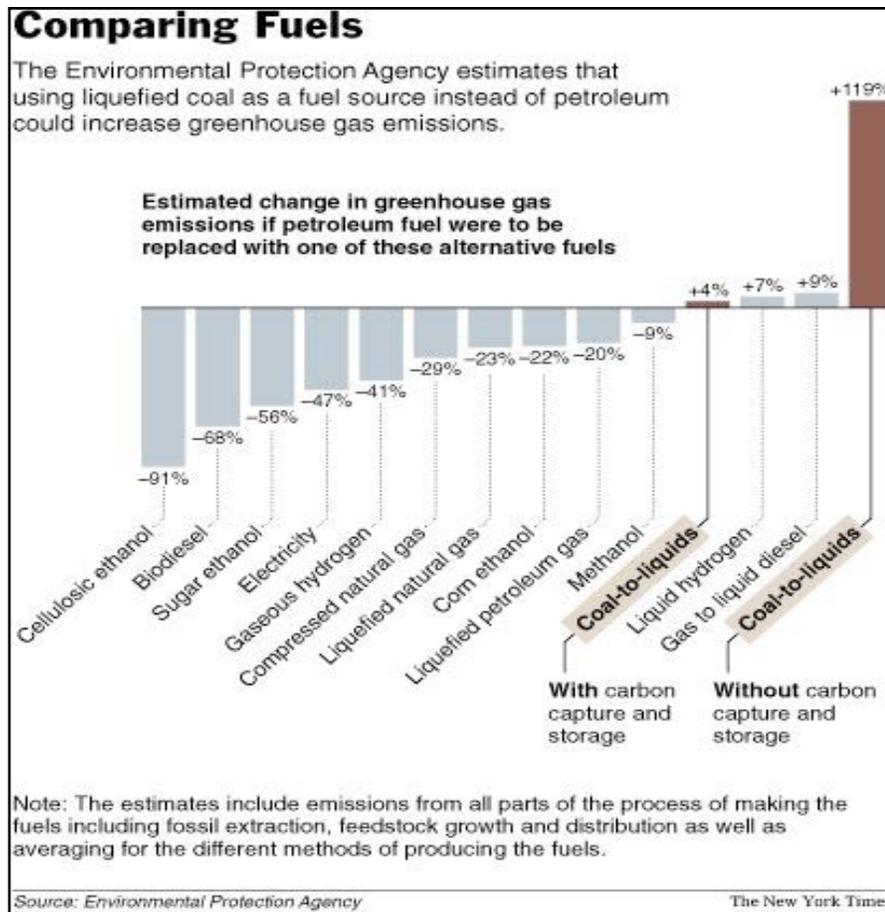
Advocates of CTL claim that the process could create transportation fuels such as gasoline, diesel, and methanol. While CTL fuels would be compatible with currently existing vehicle technologies and fuel distribution systems, the conversion process emits a huge amount of greenhouse gases. Some scientists estimate that the process emits **two times as much carbon dioxide** as petroleum gas processing.<sup>13</sup> Further, the process requires vast amounts of fresh water, a resource less and less available in the amounts needed for this type of plant.<sup>14</sup>



The primary lobbying proponents of CTL fuel are the National Mining Association and the Coal-to-Liquids Coalition. Senators Mitch McConnell, Jim Bunning and Rep. Ed Whitfield have been advocates for a proposed \$4 billion CTL plant in Eastern Kentucky.<sup>15</sup>

According to that National Coal Council, **if the U.S. were to replace just 10% of our transportation fuels with liquid coal, coal mining would need to increase by 40%.**

This is clearly not a sustainable, feasible or desirable solution from KFTC's perspective because the Appalachian Mountains are already under assault from mountaintop removal mining and other destructive mining practices.

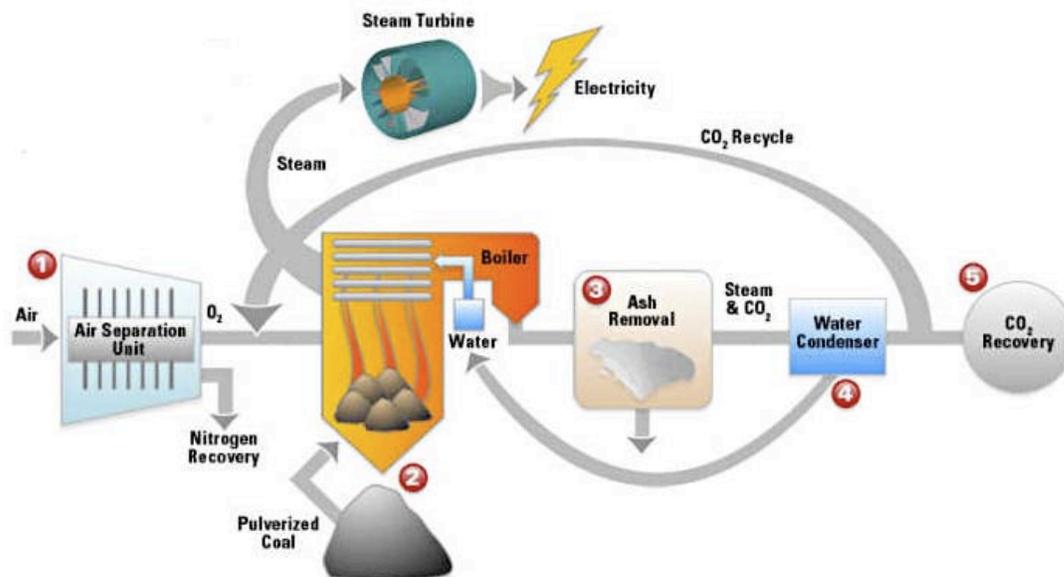


Subsidies for coal-to-liquid fuel have increased the pressure to mine in the ecologically sensitive, steep-slope mountains of Kentucky, West Virginia, Southwestern Virginia and Tennessee. At a time when many people are realizing the terrible environmental toll of coal-burning electricity and the generation costs of it are increasing, KFTC argues that massive public subsidies that serve to increase coal dependence on coal is a leap in the wrong direction.<sup>16</sup>

## THE TRUTH ABOUT “CLEAN COAL”: COAL GASIFICATION

Another alternative proposed by the coal industry is called coal-to-gas conversion or coal gasification. The technology to gasify coal is not new, having been first used in the late 1800's. Gasification is a process by which coal is gasified in a large chemical reactor using steam, high pressure and oxygen. Once it is gasified, the product is called a “synthesis gas” (meaning it came from a product not originally in gas form) and can be used to fire a particular type of electric power plant, called an “integrated gasification combined-cycle (IGCC)” plant. It can also be converted into synthetic fuels, chemicals, and fertilizers.<sup>17</sup> The industry promotes the using coal syngas as a replacement for natural gas. Approximately 45% of Kentuckians rely on natural gas for heating their homes.<sup>18</sup>

Coal to Gas Conversion Process:



Coal syngas is less efficient than natural gas because it has a lower heating value. In other words, a much larger amount of it would be required to replace the amount of natural gas currently used in the state.<sup>19</sup> Further, the process is largely untested at the scale needed, is very expensive, and continues to perpetuate coal dependence.<sup>20</sup>

There are also questions about the assertion that this is really a “clean solution.” While the plants use less energy and produce fewer emissions than coal-burning plants in operation today, the process still emits CO<sub>2</sub>, particulate matter, sulfur and trace metals (such as mercury) that will have to be removed. Industry relies on carbon sequestration as the answer to the emissions problem. There are four IGCC plants currently in operation in the U.S.<sup>21</sup>

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