



Fact Sheet

Integrated Gasification Combined Cycle Benefits, Costs & Jobs

Background

Integrated Gasification Combined Cycle Technology (IGCC) is a coal energy production method that offers a smaller environmental footprint and more efficient energy production than a conventional coal plant.

On the surface, IGCC may seem more expensive to build and operate than the traditional pulverized coal production method. Today this is true but the governing economic dynamics will change and IGCC will soon be the better cost option over traditional pulverized coal.

Future projections of costs and liabilities must be taken into account when assessing the viability of an energy source and strategy. Power plants run for decades and cost estimates must be calculated with this in mind. Regulators and producers must consider the laws and market conditions of the future. If they fail to do so, their decisions today could cost ratepayers significantly down the road. IGCC must be evaluated against pulverized coal based on what is most likely to happen in the electricity market in coming years.

IGCC's Cost Efficiency

IGCC dramatically lowers mercury, and NOx and SOx emissions, and is cheaper to convert to carbon capture production than traditional pulverized coal. IGCC also has potential efficiency advantages and is optimum at plants where power generation and industrial production are combined to allow greater efficiency and cost control.

If carbon capture is not a part of the analysis, IGCC has a cost premium of about \$5 to \$7 per megawatt hour of energy generated. Since a coal-fed baseload plant produces electricity at \$35 to \$55 per megawatt hour, these lower numbers are significant.

Most pollutants, including carbon dioxide, are easier to strip out of IGCC than from a traditional pulverized coal plant. So if a carbon dioxide tax is imposed or a carbon market is created, IGCC will have an advantage in terms of cost and technology. If carbon capture is included in estimates, IGCC would have a cost advantage of \$10 per megawatt hour.

Many of the nation's largest utility holding companies are pursuing IGCC projects as they see carbon restrictions on the horizon. These companies are building IGCC to capitalize on a competitive advantage, while others ignore the likelihood of carbon constraints at great risk.

Even without carbon restrictions, IGCC costs are going to improve versus conventional coal. Construction costs are high now because of a lack of "off the shelf" engineering. This is changing rapidly. Large energy component companies are developing more complete engineering packages.

Additionally, IGCC and energy efficiency technologies will continue to improve. Efficiency gains will lead to fewer pollutants and, in a carbon-constrained world, less cost. If consumption goes down while output remains stable, emissions will be costly and will be reduced.

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IGCC & Jobs

In IGCC energy production, there is an increased need for more specialized laborers and employees compared to pulverized coal. This increase is important.

In the electric utility sector, job multipliers are significantly higher than they are in various other parts of the economy. This means a significant number of local jobs are created community-wide when a few electric utility jobs are created.

Co-production is an area in which large job creation gains will be made. IGCC makes the most economic sense when it is coupled with another production process. For example, when technology is also implemented to produce syngas, hydrogen, chemicals, fertilizers, and other liquid fuels. Petro-chemicals can be manufactured and sulfur can be extracted during the gasification process and sold either in its elemental form or as sulfuric acid.

Ohio's Advantage

Ohio has particular advantages with regards to IGCC. Ohio has the oil fields, abandoned mines, un-minable coal, and other geologic formations that are ideal for carbon capture and storage. Ohio also possesses vast coal reserves - this means low transportation costs.

Finally, because IGCC is such an efficient method for sulfur removal, Ohio's Eastern coal, which today has to be burned with a high proportion of Western coal because of its sulfur content, can be burned by itself. This in turn would create a reliable, largely in-state, energy cycle.

IGCC's Potential

IGCC is a transitional technology and will help bridge current markets to future ones. IGCC represents a strong step towards future technology and future regulatory landscapes.

In addition, there will be large-scale federal support for IGCC. The federal Department of Energy has committed to a decade-long, \$2 billion IGCC cleaner coal research initiative.

We expect that this investment will produce IGCC technology advancements, which will find their way to private production, improving the profit margins

of IGCC and decreasing the competitive advantage of traditional pulverized coal.

The shift to IGCC as a preferred method of coal energy production over traditional pulverized coal will come, due to two factors: 1) knowing its environmental benefits and its importance as a reliable base-load domestic power source, cleaner coal initiatives are a reasonable alternative to traditional coal; and 2) the creation of a carbon market or carbon constraint will make IGCC economically viable. Once carbon emissions hit a threshold price, traditional pulverized coal production no longer will be able to compete.

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